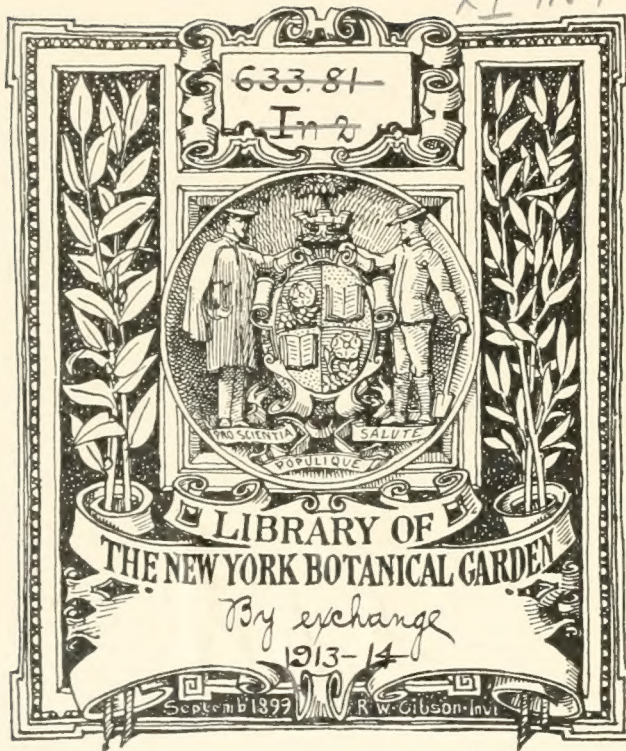


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A

Accident—Fatal Explosion in Factory.....	491, 611
Accidents from Rubber Cement.....	77
Poisoning at Russian Rubber Factory.....	509
Prevention—Mercury Poisoning.....	111, 378
Acetone from Natal.....	563
Acid Mine Water, Action of, on Insulation of Electrical Conductors.....	365
Acre Rubber Tax.....	59, 406
Acreeage, Rubber, in Java and Sumatra Compared.....	451
in Java and Sumatra Increased.....	100
in Malaya.....	678
of Plantation Rubber in Far East.....	678
Action of Copper and Other Metals on Rubber	600
Addition Products of Rubber.....	400
Adulteration in Rubber Industry.....	121
of Plantation Rubber.....	506, 601
Advertising, Co-operative.....	283
AERONAUTICS—	
Airship Propellers of Hard Rubber.....	153
Aviation in Russia.....	565
Balloon "Goodyear".....	25, 75, 85
Balloons Return Home.....	130
"Drinking on the Fly".....	74
Fastener Device for Aviator.....	307
Italy Still Building Dirigible Balloons.....	266
Parachute Device for Aviator.....	371
Principal Risks of Aviation.....	535
Russian Order for Aeroplanes.....	674
To Fly Around the World.....	440
Africa, German East.....	41, 45, 124
German East, Bad Effect of Lowering Rubber Prices.....	625
South.....	24, 177
West, Compared with South America.....	99
African Rubber Industry.....	(Map) 296
and Para Rubbers Compared.....	237
Rubbers, Reduced Profits on.....	45
Agricultural Conference, International.....	270
Instruction in State of Para.....	627
Agriculture, New School of, in Java.....	679
Succeeding Rubber Gathering in Brazil.....	644
Tropical, International Congress of.....	322, 676
Use of Explosives in.....	627
Air Pressure Gages, Increasing Use of.....	550
Air-Sealed Vacuum Jar.....	607
Airship Propellers of Hard Rubber.....	153
Akers Mission to Amazonia.....	566
Akron Rubber Trade.....	16, 75, 129, 187, 244, 301, 357, 424, 485, 542, 602, 661
Albumen in Crude Rubber.....	563
Alps, Bob-Sledding in, with Rubber Tires.....	124
Amazon Country.....	41, 99
"How It Served the Colonel".....	(Editorial) 462
Hopeful Future of Rubber in.....	644
Rubber Shipments for 1912 and 1913.....	6
The Awakening on the.....	337
Upper, Future of Rubber Industry on the	643
Amazonas and Para, Boundary Dispute Between.....	644
Amazonia, Akers Mission to.....	566
Present and Future.....	570
Amazonian Permanent Commission.....	62
American Association Commerce and Trade, Berlin—Meeting.....	210
Consumption of Rubber.....	338
Foundrymen's Association and the Saloon.....	464
Exports and Exporting Methods.....	469
Institute of Chemical Engineers, Transactions.....	240
Analysis of Rubber; Determination of Carbon of Rubber Insulation.....	649, 379
And Why Not Rubber Tennis Courts?.....	(Editorial) 527
Anniversary of Franklin W. Pitcher (Portrait) of INDIA RUBBER WORLD, Twenty-fourth.....	201
Annual Show Losing Favor, The.....	(Editorial) 339
Antimony, Golden Sulphide of.....	224
Apocynum Cannabium and Apocynum Androsaemifolium Grown in Ohio.....	645
Appetite, Rubber Device for Measuring.....	374
Appleton, Francis H., Jr.....	(Portrait) 667
Appreciation of George P. Whitmore.....	(Editorial) 397
Arbitration, Proceedings in Rubber Case.....	483, 551
Arbor Day in Para.....	627
Arens' (Dr.) Investigation of the Cultivation of Rubber.....	678
Argentina, Rubber Tariff of.....	178
President Pena and His Book.....	(Editorial) 528

B

Armoring Machine for Hose and Cable.....	*94
Army, French, Rubber Clothing for.....	97
Service, Motor Trucks for.....	*602
Shoe, The Importance of.....	(Editorial) 640
Artificial and Synthetic Rubber.....	563
Asbestos.....	36, 150, 182, 364, 507, 682
Asclepias Syriaca, as Source of Rubber.....	*645
Association, Cotton Manufacturers, National—Meeting.....	292
German Rubber Manufacturers—Meeting.....	563
International Commercial and Industrial, Congress.....	527
Insulated Wire Manufacturers, Sales.....	96
Motor and Accessory Manufacturers, Traffic Service of.....	669
Of Commerce and Trade, American, Berlin. Rubber Growers, London.....	210
171, 267, 383, 468, 562	
Rubber Trade, of London.....	563
Atomizer, Multiple.....	*263
Attaching Rubber to Metal, Process for.....	*14
Australia, Cotton-Growing in.....	535
Federal Tariff of.....	177
"Automassage" Shaving Brush.....	*548
Automobile Improvements.....	134, 259, 265
Industry, Extent and Growth of.....	251
Legislation.....	98, 463
Legislation, Perennial.....	(Editorial) 283
Salon, Paris, Fourteenth.....	265
Show, New York's Fourteenth Annual.....	*233
Top, "Neverleek," Made of Rubber.....	*144
Trade, No Psychology in.....	(Editorial) 581
Aviation (See Aeronautics).....	
Awakening on the Amazon, The.....	337
B	
Bag, Ice, Rubber, with Textile Lining.....	307
Ice, Water Bottle and Fountain Syringe.....	*497
Combination.....	497
Bahamas, Rubber Vine Cultivation in.....	99, 155
Bait, Fish for Trolling.....	*356
Soft Rubber, Weedless.....	*307
Baker, A. C., Death of.....	367
Balata Belting, Advantage of.....	33, 88
for Shoe Soles.....	151
Gathering, Difficulties of.....	*293
in British Guiana.....	212, 324, 449, 572, 680
in Dutch Guiana.....	293, 324, 450, 572
in French Guiana.....	572
Industry in Surinam for 1913.....	450
Plugs for Rubber Heels.....	419
Production in Dutch Guiana.....	680
Trees, Experiments in Felling.....	449
Ball, Golf, Design for.....	*608
Golf, Dunlop "V".....	*497
Golf, Suicide Caused by.....	664
Golf, Value of English Patent on.....	97
Two Practical Uses for the Rubber.....	22
Balloons (See Aeronautics).....	
Balmacan, Raincoat.....	*497
Bancroft, C. K., Report on British Guiana.....	626
Band, Pronged, for Bottles, as Protection Against Poisoning.....	378
Bandeau, Pullastic, for Hat.....	378
Banking Act, New, and Crude Rubber.....	461
Banks, North American, in South America.....	(Editorial) 583
Batavia Rubber Congress and Exhibition, 327, 385, 461, 510, 511.....	625
Rubber Exhibition, Prizes Offered for.....	*547
Bathing Caps, Cape, Collar and Girdle.....	*203
Bath Mat, Non-slip.....	281, 415
Battleships, Rubber in.....	564
Bayer & Co. Transfer Library.....	*672
Bead Forming Machine, Stevens.....	*498
Bed, Compact, Pneumatic Camp.....	625
Belgian Congo Colony, Conditions in.....	44
Rubber Freights Reduced.....	96, 178
Belgium, Tariff of, on Rubber.....	148
Belgo-Brazilian Chamber of Commerce.....	86, 315
Belt, Conveyor.....	*608
Leather and Rubber, Men's.....	259
Making Machinery.....	33, 88
Belting, Balata, Advantage of.....	675
Belts, Conveyor; English Production Increasing.....	24
Bertsch, Paul E., Death of.....	384
Bethune, A., on Standardization of Rubber.....	111
Bichloride of Mercury (Life-saving Potentials of Rubber).....	(Editorial) 111
Binding Ties of Trade, The.....	(Editorial) 527
Birkenstein, Louis.....	(Portrait) 437
Blake, Sir Henry Arthur.....	(Portrait) 321, 560
Blankets, Printers', Machine for Resurfacing.....	*616
Blower, Rubber, for Antiseptic Powder.....	*498
Blowout Sleeve.....	*143
Bluefields' Rubber Exports for 1911 and 1912.....	325
Blueprints, Rubber Stamps for.....	251
Bob-Sledding in Alps with Rubber Tires.....	*124
Bolivia, Rubber Crisis in.....	325
Bolivia and Acre.....	406
Boll Weevil, Ravages of.....	553
BOOK REVIEWS (See Editor's Book Table).....	
BOOTS AND SHOES (See Footwear).....	
Bordeaux, Rubber Market.....	97, 381
Boston Rubber Trade.....	17, 76, 128, 187, 242, 300, 358, 425, 486, 542, 602, 661
Botanic Gardens, Singapore and Penang.....	100
Peradeniya.....	*618
Britain's Tropical.....	591
Botanical Service Established in Tunis.....	381
Bottle, Laboratory Wash.....	*497
Water, Heating Apparatus for.....	442
Boundary Dispute Between Para and Amazonas.....	644
Bowstrait.....	*608
Boxes, Special, for Packing Rubber.....	212
Boycotting Old John Barleycorn.....	(Editorial) 464
Bradley, Prof. W. P., Joins United States Rubber Co.....	311
Brady, Anthony N.....	89, 437
Brake, Magnetic Clutch and, with Flexible Coupling.....	674
Brandes, C. O.....	(Portrait) 83
Brazil, Agriculture Succeeding Rubber Gathering in.....	644
A Great Loss to (Dr. Jacques Huber).....	282
Amazon Country.....	41, 99
Country—How It Served the Colonel.....	(Editorial) 462
Country, Hopeful Future of Rubber in.....	644
Rubber Shipments for 1912 and 1913.....	6
Upper, Future of Rubber Industry on the	643
Amazonas and Para, Boundary Dispute Between.....	644
Amazonia, Present and Future.....	570
Amazonian Permanent Commission.....	62
and the Rubber Problem.....	61
Bunch Grass Grown with Hevea Rubber.....	(Extract)*346
Commercial Museum Opened in.....	381
Continues Preference to American Goods.....	513
Exports to, Comparison Germany and United States.....	232
Manihot in.....	10
Production of Fine Para in, etc.....	326
Rubber Crisis in.....	*341, 401
Crisis in.....	(Para Notes) 627
Crisis; Report Mixed Commission.....	408
Exports from, etc.....	232
Industry in, and the Orient (Book Review).....	*652
Manufacturing Industry in.....	121
Situation in.....	*169
Situation, German View of.....	382
Tariff of.....	180
to Borrow a Hundred Million More.....	528
Where Ceylon Has Advantage of.....	56
Brazilian, Belgo, Chamber of Commerce.....	148
Comparison of Para and Plantation Rubbers	171
Loan.....	63, 513, 528
Mixed Commission, Report of.....	408
Process of Rubber Coagulation, New.....	507
Rubber Crisis Causes Return to Agriculture	644
Rubber Exposition, Permanent.....	627
Rubber Production Compared with That of the Orient.....	*652
Rubber Steamers, Casualties to.....	349
Breathing Exercises, Apparatus for.....	275
Bridge & Co., David, Solid Tire Machines.....	*13
British Exports of Rubber Manufactures.....	561
Guiana; Balata in.....	212, 324, 450, 572
Display at London Exhibition.....	681
Manihot Glaziovii Tapping in.....	155
Investments Abroad.....	561
Possessions, Rubber Production of.....	623
Brown Jaco, (a Rubber Substitute with "Bounce").....	374
Brush, Nail, Bailey's.....	*91
Nail, Rubberset, Sanitary.....	*498
Rubber, "Sani Masseur".....	*497
Shaving, "Automassage".....	*548
Tooth, Finger.....	*34
Buffing Wheel for Rubber Hose Testing.....	377

Buitenzorg, Java, Treub Memorial Laboratory at	678
Bulbs for Automobile Horns	391
Bumper for Screen Doors	670
Bunch Grass to Be Grown with <i>Hevea</i> Rubber	347
Burkhill, I. H., Successor to H. N. Ridley	100
Burma, Rubber in	636
Rubber Cultivation in	679
Business of Stealing Rubber, The (Editorial)	3
Byrne Curing Process	623

C

Cable, Additional, Between New York and Colon	636
Armoring Machine for Hose and	94
Companies Benefit by Cheap Rubber	623
Endurance (Okonite)	315
Hudson River, for Telephone Co.	614
Insulated Wire and	
(Lecture by Mr. Middleton)	498
Calculating Machine; Slide Rule for Rubber Workers	536
Calendar Rolls, Lubricating Box for	557
Room Layout	550
Tension Device for	616
California, Employers' Liability Act in	429
Exhibition	15
Camp Bed, Pneumatic	498
Canada, Tariff of, on Rubber Goods	174
Canadian Commerce in Rubber Goods	130
Canal, Panama, New Market Opened by	462
Candy Molds of Rubber	427
"Caoutchouc" (Book Review)	183
"Caoutchouc, Le" (Book Review)	422
Cape, Collar, Girdle, Bathing Caps	547
Capital in English Plantation Companies	380
Carbon Black from Natural Gas	288
Determination of, in Rubber Analysis	649
Cargoes, Rubber, Afloat at Outbreak of War (Editorial)	667
Carryall or Pannier, Motorcycle	497
Cartoon, "Staggered Tread"	30
When Man is Made of Rubber	474
Talking Through Your Hat	143
Car Washer, Adams, with Rubber Cap	91
Cash Value of One Good Snow Storm (Editorial)	281
Castilloa, New Tapping Knife	9
Casualties to Brazilian Rubber Steamers	349
Catalogs of Standard Size Urged	349
Catch Crop with Rubber, Coffee vs. Tea	100
Ceará in Brazil (R. N. Lyne Report)	33
Cell Drying Machine	145
Celluloid Superseded by Lyrolit	150
Manufacture, Rubber in	476
Cement, Rubber; Accidents from	77
Some of Its Uses (Editorial)	472
Census, Rubber Manufacturing Statistics in Next	224
Central America, Opportunities in	88
Rubber Planting Discouraged	116
Cess (Tax on Rubber Producers)	117
Ceylon Has Advantage of Brazil	56
Chamber of Commerce, Report of 1913	480
at New York, 1912 Exposition Report	504
Chamber of Commerce, Belgo-Brazilian	148
Ceylon, Report of 1913	480
"Chaps," Cowboys, of Rubber	593
Chart, Lewis and Peat's	350
Chattanooga Wants Rubber Industry	504
Chaves, Colonel, and the Acre Rubber Tax	406
Check, Rubber, for Screen Doors	670
Chemical Engineers, American Institute of, Transactions	240
Chemicals, Market for Compounding Ingredients and	686
Chemist, A Distinguished Rubber—Prof. Sharples (Portrait)	490
Chemistry of Rubber (Book Review)	298
Chemists' Club—Year Book, 1914	552
Chemists, Rubber—What They Are Doing	
14, 112, 224, 340, 400, 481, 600,*	649
Chicago Passes Fender Ordinance	111
Rubber Trade	78, 131, 188, 244, 302, 359, 426, 487, 544, 604, 663
Chicle, a Minor but Vastly Popular Rubber Sort (Editorial)	581
Exports, Guatemalan, Increasing	325
Chile, Tariff of, on Rubber Goods	179
China, Registration of Foreign Patents and Trade Marks in	115
Civic Federation, National (Editorial)	110
Clamp, Hose, New	499
Patch, High Pressure	396
Cleaning Up St. Louis (Editorial—Philanthropy, etc.)	399
Clearly Libelous (Durability of Rubber Footwear) (Editorial)	223
Clerk Can Undo It All, The (Editorial)	168
Clothing, Rubber	35, 144, 380
Rubber, Balmacan Raincoat	497
Coats at Niagara and Labrador	519
for French Army	97
"Kid's Combination Set"	128
New Material for	263
Women's Raincoats	203, 378
Waterproof Coat for the Horseman	307
Club, Chemists', Year Book 1914	552
Foreign Trade, "Indian House"	613

Republic Rubber Co. Employees	81, *253
Rubber (See Rubber Club of America)	
Clubs, Automobile, as Rubber Retailers	494
Clutch and Brake, Magnetic, with Flexible Coupling	674
Dodge Friction, with Safety Throwout, etc.	672
Magnetic, as Safety Device	500
Coagulants, Various, Results of	36
Coagulation of <i>Hevea</i> Latex by Smoking	118
of <i>Hevea</i> and Strength of Rubber	600
Review of Mr. Barritt's Paper on	507
Simão Da Costa's Machine for	326
Tanks for	44
Coagulator, Norzagaray's	558
Coat, Waterproof, for the Horseman	307
Coating and Spooling Machine	258
Fabric, New Method and Machine for	208
Woven Hose, Cobb's Machine	556
Coats of Arms and Flags, All American	299
Rubber, at Niagara and Labrador	519
Cobb's Machine for Coating Woven Hose	556
Cochin China, Rubber Planting in	42
Cocoa Planting in Uganda	538
Cocoa Nut Cultivation and Plantation Machinery	354
Coffee Planting in Uganda	538
Pot Spout of Rubber	307
vs. Tea as Catch Crop with Rubber	100
Collar, Girdle, Caps, Cape	547
College of Tropical Agriculture	43
Colombia, Appropriation of, for Exploration	572
Ought to Throw in Her Rubber Trade (Editorial)	583
Some Neglected Nearby Markets	229
Coloring of Rubber Goods	224
Comb with Renewable Teeth	144
Combination Ice Bag, Water Bottle and Syringe	497
Combs, Pressed Rubber Dies for Making	615
Commerce and Labor Department, Secretary's Report	619
Foreign, of the United States	537
of Great Britain in Rubber Goods	152
Rubber Goods in	103, 184, 236, 292, 362, 430, 503, 505, 599
Commercial Organizations in Germany	566
Commission, Akers	62
Amazonian, Permanent	408
Brazilian Mixed, Report of	171
Comparison, Brazilian, of Pará and Plantation Rubbers	375
of Crude and Waste Rubber Imports	340
Composite Nature of Crude Rubber	686
Compounding Ingredients and Chemicals, Market for	674
Ingredients; Weighing Machine	650
Compounds, Nitrogen in Vulcanization of Rubber	112
Rubber, Mineral Matter in	601
Vanadium and Tungsten in	270
Conference, International Agricultural	676
International, Tropical Agriculture	321
Rubber, Plans for 1914	625
Dongo, Belgian, Conditions in	44
Belgian, Rubber Freight Reduced	44
French, <i>Landolphia</i> in	567
Rubbers, Technological Study of	511
Congress and Exhibition, Batavia	327, 385, 461, 510,
at Pará for Development of Amazon Country	41
at Pará, Story of	57
of Tropical Agriculture, International	676
International Commercial and Industrial Associations	527
Rubber, in Pará	41, 57
Connaught, Prince Arthur of (Portrait)	321
Cornery, John C., Death of	664
Consular Report (British) on Pará Trade	562
Consumption of Rubber, American	338
Rubber, Automatic Increase in	221
Compared with Population	526
English	623
German Manufacturer on	526
Per Head of Population	362
Contests in Tire Upkeep	429, 488
Contraband of War, Rubber Not Included in	682
Conveyor Belts	86, 315
Belts, Increasing English Production	675
Cooke, Henry G., Death of	309
Co-operative Advertising	283
Copper and Other Metals, Action of, on Rubber	600
Corner? Will Eastern Planters Try a (Editorial)	3
Corset, Elastic Fabric for	608
Cotton	124, 199, 405, 477, 498, 535, 674
Large Japanese Order for	
and Rubber, Close Connection Between (Editorial)	477
and Rubber Manufacture	283
Foreign, The Great Increase in	397
Growing in Australia	535
Its Varieties, Geography, etc.	289
Manufacturers' National Association—Meeting	292
Statistics—Production and Consumption	291
Supremacy in America	55
Trade, Notes from	388
Coupling, Flexible, Magnetic Clutch and Brake with	674
Giant Magnetic, for Rubber Mill	557
Hose, Standard	430
Cowboys' "Chaps" of Rubber	593

Crisis in Brazil	341, 401
Pará Notes	627
Report Mixed Commission	408
Crosbie-Roles, F., Advocates the "Cess."	117
Crucible Holder, Rubber	262
CRUDE RUBBER—	
Amazon Shipments for 1912 and 1913	6
Chemical Composition of	14
and New Banking Act	461
and Waste Rubber Imports Compared	375
Composite Nature of	340
During 1913	237
German Imports and Statistics	39
Low Grade, Stocks of, in London	380
Prices, and Reclaimed, Conform	379
<i>Cryptostegia grandiflora</i> , Rubber Vine Suited for Bahamas	99
Cuba, Fender Legislation of	98
Rubber Tariff of	180
Cultivation of <i>Funtumia</i> and Pará, Gold Coast	679
of Rubber in Burma	679
Dr. Arens' Investigation	678
in French Indo-China	680
Manaos Experiment Station	644
in Nigeria, Papua, etc.	45
on Ohio	645
on Malayan Peninsula	478
Cure, Byrne Process	623
Wickham Smoke, Practical Test of	117
Current Phrase Illustrated	92
Currier, G. O., Death of	613
Curtain Support, "Uneek"	607
Customs Ruling, Raincoats	631
Rulings, Recent	255, 471, 554

D

Da Costa, J. Simão; Coagulating Machine (Portrait)	326
Dahne, Dr. Eugenio (Portrait)	15
Damaged or Lost Goods, Liability of Railroads for	659
Dancing Pump, "Castle"	670
Dannerth, Dr. Frederic, Laboratory Plan for	257
Davis, James L., Death of	89
Day, Asa Wilton, Death of	251
De Frate, Frank, Death of (Portrait)	664
Dealer, Rubber, Labrador Paradise of	660
Decorticator for <i>Landolphia</i>	556
Defesa da Borracha, Record of	404
Definition, Direct, of Rubber, Impossible	563
Deflation of Tire Rings Bell	159
Delhi Testing Station, Medan, Sumatra	385
De Long, Wm. A. (Portrait)	370
Interview, Singapore Market	201
Demoralizing Force of Holidays, The (Editorial)	528
Dental Jaw Brace	607
Detectorphone for Locating Machine Troubles	134
Determination of Carbon in Rubber Analysis	649
of Mineral Matter in Rubber	112
of Rubber by Combustion of Nitrosite	649
Quantitive of Sulphur in Rubber	112
De Toledo, Dr. Pedro	232, 241
Dies for Making Pressed Rubber Combs	615
Dime Check for Screen Door	670
Dirigibles, Italy Still Building	266
Disc, Rubber, for Lifting Cream	34
Diseases of Tropical Plants (Book Review)	653
Dishes, To Prevent Breaking on Faucet	307
Disinfectant for Telephone	670
Diving, Sailors Work Under Water	47
Dock Rates, London, Reduction in	321
Dodge Friction Clutch, etc.	672
Dog, Rubber Requirements of the	268
Doll, Rubber; "Kewpie"	263
Douche, Nature's Assistant	378
Doughty, Henry J., Inventor (Portrait)	666
Drinking on the Fly (Aviation)	74
Drinking Tube of Rubber for Pocket	92
Dryden, George B. (Portrait)	29
Duck Blind, Pneumatic Floating	203
Durability of Rubber Shoes (Editorial)	223
Dutch East Indies; Import Trade of	678
Capital Investments in	569
Japanese Planters in	156
Rubber and Tea Companies	451
Exports from	327
Growers' Association	270, 431
Dutch Guiana, Balata in	293, 324, 450, 572, 680
Duty, Export, on Rubber	124, 397, 402, 525, 530
Dynamite, Farming by	627

E

Ear Muff, Rubber	92
Protection Device Against Noises	423
East Indies, Dutch; Import Trade of	678
Japanese Planters in	156
Eastern Planters—Will They Try a Corner? (Editorial)	3
Eaton, B. J., Report of, on European Factories	151
Economy, Great, of the Larger Tires (Editorial)	1
Ecuador, Foreign Trade Opportunity (Map)	465
EDITORIALS—	
A Genuinely Helpful Sort of Help	318
A Great Loss to Brazil	282
A Loose Piece of Legislation	53
A Minor but Vastly Popular Rubber Sort	581
And Why Not Rubber Tennis Courts?	527
Boycotting Old John Barleycorn	464

Brazil to Borrow a Hundred Million More.	528	Future of Tropical America		Hose, Specifications	292
Clearly Libelous	223	(The Tropical Exploitation Syndicate, Ltd.)	422	Proofing, Asbestos and Uralite	150
Colombia Ought to Throw in Her Rubber		Grenier's Rubber Annual, Kuala Lumpur	241	Firestone, R. J.	311
Trade	583	Hendrick's Commercial Register	89	Fish, Rubber, for Trolling	356
Co-operative Advertising	283	Imperial Institute Bulletin—London	654	Fishing Rod, Eraser Used in Reel Seat of	670
Cotton in Conjunction with Rubber	283	India Rubber Laboratory Practice		Footwear—	
Fender Regulations	111	(W. A. Caspari)	421	"Apsley" Tango Shoes	143
Four Months of the New Tariff	338	Le Caoutchouc; Sa Chimie Nouvelle, Ses		"Barker" Hunting Shoes	138
Getting Accurate Rubber Statistics	223	Syntheses. (A. Duboc and A. Lutringer)	422	Bathing Shoes, Rubber	378
Has Successful Synthesis Arrived?	525	Molded Electrical Insulation and Plastics		Building Rubber Boots, Pictorial Story of	657
Hevea Planting Successful in Mexico	4	(Emile Henning)	619	Durability of Rubber Shoes	223
How the Rubber Country Served the Colonel	462	Monographs on Rubber Manufacture		First Rubber Shoes Made in America	252
In Our Twenty-fifth Year	1	(Gummi Zeitung)	654	Golf Shoes, Rubber	378
Inventor of the Pneumatic Tire	640	Mozambique	33	Leather Boots Lined with Rubber	262
Is Rubber Headed Toward Higher Levels?	167	Planting in Uganda—Coffee, Pará Rubber		New Method of Vulcanizing Footwear	444
Is Singapore to Be the Future Rubber Mar-		and Cocoa		Price Reduction in Footwear	252
ket?	53	(E. Brown and H. H. Hunter)	538	Pumps, Canvas, with Rubber Soles	204
Life Saving Potentialities of Rubber	111	Preparation of Plantation Rubber		Castle Dancing	670
Mexico from the Inside	167	(Sydney Morgan)	147	New "Glove," Canvas and Rubber	442
New Work for Motorcycle Tires	4	Report of Ceylon Chamber of Commerce	89	Pure Shoe Bill	192
Nineteen Thirteen in the Rubber Trade,		Report of Commissioner of Education	539	Rubberized Velvet Shoe	608
and 1914	165	Royal Colonial Institute Year Book	654	Rubber Shoes Not Replaced by Waterproof	
No Psychology in the Automobile Trade	581	Rubber and Rubber Planting. (R. H. Lock)	240	Leather	366
North American Banks in South America	583	Rubber Industry in Brazil and the Orient		Shoes that Protect the Ground	34
"One of the Five Largest Producers"	583	(C. E. Akers)	652	Tango Shoe, Popularity of	427
President Pena and His Book	528	Rubber, Its Sources, Cultivation and Prepa-		Straps to Make Rubber Shoes Stick	263
Prizes to Be Awarded at London Rubber		ration		The Importance of the Soldier's Shoe	
Exposition	222	Rubber Producing Companies	33	(Editorial)	640
Re Rubber Thieving	464	Scientific American Reference Book	147	Why Leather Shoes?	111
Retaliating on the Pedestrian	453	Solvents, Oils, Gums, Waxes and Allied		Wool Boot, Origin of	482
Rubber Consumption Compared with Popu-		Substances	503	Flags and Coats of Arms, All American	299
lation	526	(Frederic S. Hyde)	654	Floating Duck Blind, Pneumatic	203
Rubber Literature	221	Straits Settlements' Garden Bulletin	654	Flooding, Rubber Goods for	362
Rubber Scrap Too High	109	Transactions American Institute Chemical		Flooding, Rubber	380, 480
Rubber Works for the Human Interior	464	Engineers	240	Flour, Dry, as Rubber Preserver	24
Self-Interest the Best Promoter of Effi-		Two Americas, The. (General Rafael Reyes)	421	Foot, Rubber, with Steel Springs	608
ciency	54	Vandegrift's Digest of United States Tariff		Ford, Henry, Power Saving Plans of	445
Shall Labor Constitute a Privileged Class?	526	Act	503	Ford, J. Howard, Death of	367
Taking the Measure of the Last Thirty		Waterproofing of Fabrics, The		Foreign Commerce of the United States	537
Years	110	(Dr. S. Murzinski)	619	Trade Club, "Indian House"	613
The American Consumption of Rubber	338	Who's Who in the Rubber World	421	Trade Opportunities	62, 88, 115, 172, 229,
The Annual Show Losing Favor	339	Efficiency, Self-Interest Best Promoter of	54	248, 311, 368, 413, 441, 465, 549, 631,	
The Automatic Increase in Rubber Consump-		Egg Testing Device, Rubber in	670	638, 641, 646, 682	
tion	221	Elastic Cloth, Reproduction 1857 Circular	71	Formic Acid in Rubber Reclaiming	400
The Awakening on the Amazon	337	Elastic Fabric for Corsets	608	Forsyth Dental Infirmary Grounds Increased	661
The Binding Ties of Trade	527	Electrical Insulation (Molded) and Plastics		Forsyth, J. H., Death of	425, 434
The Business of Stealing Rubber	3	(Book Review)	619	Foundrymen's Association and the Saloon	464
The Cash Value of One Good Snowstorm	281	Electrical Show, Rubber at	103	Fountain Pen, The Making of a	533
The Clerk Can Undo It All	168	Eliot, Charles W., View of Labor Union	282	Pen, Transparent	548
The Demoralizing Force of Holidays	528	Employer's Liability Act in California	429	Four Months of the New Tariff	338
The Export Burden Rubber Has to Bear	525	Employees, Provisions for Safety of	485	France Excludes German Nipples, etc.	97
The Great Economy of the Larger Tires	1	English Consumption of Rubber	623	Rubber Clothing for Army of	97
The Great Increase in Foreign Cotton	397	Plantation Companies, Capital in	380	Tariff of, on Rubber Goods	175
The Importance of the Soldier's Shoe	640	Eraser, as Eradicator of Tarnish from Metal	31	Frasch, Herman	597
The Incidental Injustice of Justice	463	Sanitary	442	Freight Charge Errors, Action Motor and Ac-	
THE INDIA RUBBER WORLD Follows the Up-		used in Reel Seat of Fishing Rod	670	cessory Manufacturers' Association	669
town March	166	Etymology of Verb "To Rubber"	506	Rates, Netherlands, Too High	569
The Last of the Boston Pioneers	167	Euphorbia Tirucalli, Natal Rubber Tree	569	Rubber, Reduction in Belgian Congo	44
The Latest Exploit of Inventive Genius	339	Europe, Rubber Interests in	264, 381, 448,	French Congo, Landolphia in	44
The London Rubber Show in June	398	European Factories, Report of B. J. Eaton on	151	Guiana, Balata in	572
The New Market Opened by the Panama		Exhibition, Brazil, Permanent	627	Story of Gold in	572
Canal	462	California	15	Indo-China, Rubber Cultivation in	680
The Opening Door of South American Trade	638	London	151, 210, 222, 321, 398, 508, 560,	Syndical Chamber of Rubber Manufacturers	
The Perennial Making of Auto Laws	283	Additional Prizes Awarded	676	to Exhibit in London	151
The Persistence of Rubber	55	British Guiana Display at	681	Friction Clutch with Safety Throw-out, Dodge	672
The Possibilities of the Motorcycle	640	INDIA RUBBER WORLD at	508	Fulton, Miss D., Secretary of London Exhibi-	
The Reasons for the Drop in Rubber Prices	2	INDIA RUBBER WORLD Trophy for	248	tion	560, 590
The Responsiveness of the Dump Heap	337	Rubber, Batavia	327, 385, 461, 510, 511,	Funtumia elastica Compared with Pará Rubber	567
The Rubber Congress in Batavia	461	INDIA RUBBER WORLD Trophy for	510	elastica and Hevea in Gold Coast Report	679
The Rubber Heel and Sole in National Af-		Rio	41, 120	Future of Rubber	97, 153, 185
fairs	399	Experiment Station at Manaos for Rubber		of Rubber in Amazon Country Hopeful	644
The Rubber Tariffs of Other Countries	168	Culture	144	of Rubber Industry on Upper Amazon	643
The Rubber Trade's Debt to Guayule	109	Experimental Station Installed at Malaya	70		
The Tire Brings Back the War Chariot	462	Experiments in Felling Balata Trees	449		
The Transportation Tax on the Rubber		Explosion, Fatal, in Factory	491		
Manufacturer	110	Probable Cause of	611		
The Tremendous Toll that Rubber Has Paid	397	Explosives, Use of, in Agriculture	627		
The War and the Rubber Trade in the		Export Burden Rubber Has to Bear, The			
United States	637	(Editorial)	525		
Turning Philanthropy Into Profits	399	Duties of the World on Rubber	530		
Twenty Thousand Auto Tires a Day	56	Exports and Exporting Methods, American	469		
War Prices Will Start Synthesists Again	639	and Imports—Monthly Statistics (See Com-			
What That Pneumatic Substitute Must Have	55	merce)			
What the Auto Shows Have Cost the Tire	168	British, of Rubber Manufactures	561		
Makers		of Motor Cars to South Africa	24		
When the Rubber Trade Genuinely Mixes		of Rubber from Brazil	232		
(Rubber Club Outing)	582	to Brazil, Comparison, Germany and United			
Where Ceylon Has the Advantage of Brazil	56	States	153		
Whitmore, George P.—An Appreciation	397	Exposition (See Exhibition)			
Why Leather Shoes?	111	Extent and Growth of the Automobile Indus-			
Will American Cotton Always be Supreme?	55	try	251		
Will Ironclads Become Rubberclads?	281				
Will the Eastern Planters Try a Corner?	3				
Will the New Banking Law Help Crude					
Rubber Financing?	461				
Wisely Awaiting the Result of the Tariff	110				
EDITOR'S BOOK TABLE—					
Annals of Missouri Botanical Garden, St.					
Louis	654				
Annuaire Universel du Caoutchouc	539				
Botanic Gardens, Peradeniya	618				
Caoutchouc	183				
Chemistry of Rubber	298				
Cocconut Cultivation and Plantation Ma-					
chinery					
(H. Lake Coghlan and J. W. Hinckley)	354				
Culture et Exploitation du Caoutchouc au					
Brésil	352				
Der Manihot-Kautschuk					
(Dr. A. Zimmerman)	298				
Diseases of Tropical Plants					
(Melville Thurston Cook)	653				

Faber, Eberhard	252	F	
Fabric, Elastic, for Corsets	608	F	
New Method of Coating; Machine for	208	F	
the Waterproofing of	618	F	
Factories, European; B. J. Eaton's Report on	151	F	
Far East, Acreage of Plantation Rubber in	678	F	
Farming by Dynamite	627	F	
Federated Malay States, Rubber Output of	154, 210, 238	F	
Felling Balata Trees, Experiments in	449	F	
Fenders, Motor, Laws	98, 111, 208	F	
Fertilizers for Rubber, Trials of	567	F	
Festival, Tree, in Pará	627	F	
Fifteenth Annual Meeting Rubber Goods		F	
Manufacturing Co.	433	F	
Fifty Square Miles of Rubber Trees	113	F	
Fine Pará, Manihot in Production of, in Brazil	326	F	
Finger Tooth Brush	436	F	
Fire Fighting on Shipboard	159, 476	F	

Proofing, Asbestos and Uralite	150	G	
Firestone, R. J.	311	G	
Fish, Rubber, for Trolling	356	G	
Fishing Rod, Eraser Used in Reel Seat of	670	G	
Footwear—		G	
"Apsley" Tango Shoes	143	G	
"Barker" Hunting Shoes	138	G	
Bathing Shoes, Rubber	378	G	
Building Rubber Boots, Pictorial Story of	657	G	
Durability of Rubber Shoes	223	G	
First Rubber Shoes Made in America	252	G	
Golf Shoes, Rubber	378	G	
Leather Boots Lined with Rubber	262	G	
New Method of Vulcanizing Footwear	444	G	
Price Reduction in Footwear	252	G	
Pumps, Canvas, with Rubber Soles	204	G	
Castle Dancing	670	G	
New "Glove," Canvas and Rubber	442	G	
Pure Shoe Bill	192	G	
Rubberized Velvet Shoe	608	G	
Rubber Shoes Not Replaced by Waterproof		G	
Leather	366	G	
Shoes that Protect the Ground	34	G	
Tango Shoe, Popularity of	427	G	
Straps to Make Rubber Shoes Stick	263	G	
The Importance of the Soldier's Shoe		G	
(Editorial)	640	G	
Why Leather Shoes?	111	G	
Wool Boot, Origin of	482	G	
Flags and Coats of Arms, All American	299	G	
Floating Duck Blind, Pneumatic	203	G	
Flooding, Rubber Goods for	362	G	
Flooding, Rubber	380, 480	G	
Flour, Dry, as Rubber Preserver	24	G	
Foot, Rubber, with Steel Springs	608	G	
Ford, Henry, Power Saving Plans of	445	G	
Ford, J. Howard, Death of	367	G	
Foreign Commerce of the United States	537	G	
Trade Club, "Indian House"	613	G	
Trade Opportunities	62, 88, 115, 172, 229,	G	
248, 311, 368, 413, 441, 465, 549, 631,		G	
638, 641, 646, 682		G	
Formic Acid in Rubber Reclaiming	400	G	
Forsyth Dental Infirmary Grounds Increased	661	G	
Forsyth, J. H., Death of	425, 434	G	
Foundrymen's Association and the Saloon	464	G	
Fountain Pen, The Making of a	533	G	
Pen, Transparent	548	G	
Four Months of the New Tariff	338	G	
France Excludes German Nipples, etc.	97	G	
Rubber Clothing for Army of	97	G	
Tariff of, on Rubber Goods	175	G	
Frasch, Herman	597	G	
Freight Charge Errors, Action Motor and Ac-		G	
cessory Manufacturers' Association	669	G	
Rates, Netherlands, Too High	569	G	
Rubber, Reduction in Belgian Congo	44	G	
French Congo, Landolphia in	44	G	
Guiana, Balata in	572	G	
Story of Gold in	572	G	
Indo-China, Rubber Cultivation in	680	G	
Syndical Chamber of Rubber Manufacturers		G	
to Exhibit in London	151	G	
Friction Clutch with Safety Throw-out, Dodge	672	G	
Fulton, Miss D., Secretary of London Exhibi-		G	
tion	560, 590	G	
Funtumia elastica Compared with Pará Rubber	567	G	
elastica and Hevea in Gold Coast Report	679	G	
Future of Rubber	97, 153, 185	G	
of Rubber in Amazon Country Hopeful	644	G	
of Rubber Industry on Upper Amazon	643	G	

Gage, Sico Yield, for Rubber	12	G	
Gages, Air Pressure, Increasing Use of	550	G	
Galalith, for Buttons, Displaced by Lyrolit	150	G	
Gardens, Botanic, of Singapore and Penang	100	G	
Botanic, Peradeniya	618	G	
Britain's Tropical, etc.	591	G	
Garters, Rubber, with Pockets	502	G	
Gasoline, Hose for Carrying	80	G	
Gas Tubing, To Protect	91	G	
Gaskets, Machine for Cutting	377	G	
Gathering Balata in Dutch Guiana	293	G	
Rubber in Peruvian Montana	406	G	
General Rubber Co., Sumatra Plantation of	113	G	
Genuinely Helpful Sort of Help, A		G	
(Editorial)	338	G	
German Crude Rubber Imports and Statistics	39	G	
East Africa	41, 45, 124, 625	G	
Exports to Brazil—Comparison with United		G	
States	153	G	
Exports of Rubber Goods in 1913	322	G	
Insulated Wire Manufacturers' Sales Asso-		G	
ciation	96	G	
Manufacturer of Rubber Consumption	526	G	
Manufacturing Statistics	623	G	
Rubber Manufacturers' Association—Meeting	563	G	
Rubber Nipples Excluded by France	97	G	
Germany and Russia, Rubber Trade in, for		G	
1913	236	G	
Chinese Cotton Trade of, Sought by Japan	674	G	
Commercial Organization Opposed in	509	G	
Renting Motor Vehicles in	323	G	
Rubber Export Statistics	564	G	
Rubber Industry of	677	G	
Tariff of, on Rubber Goods	176	G	
Girdle, Bathing Caps, Cape, Collar	547	G	
Gloves, Leather Faced, Insulating	378	G	
Goeldi, Andre, and Runch Grass	347	G	

Goggles, Rubber, for Mineral Ore Breakers...	319
Gold Coast Government Report on <i>Funtumia</i> and <i>Hevea</i>	679
Coast Rubber and Water.....	350, 505
in French Guiana, Story of.....	572
Golf Ball, Design for.....	608
Ball, Dunlop "V".....	497
Liquid Core, Bursting of.....	611
Suicide Caused by.....	664
Balls, Value of English Patent on.....	97
Goodrich, Dr. B. F., Declared Inventor Pneumatic Tire.....	640, 671
Goodyear, Charles, Portrait of, Sold.....	198
"Goodyear, The, a Family Newspaper".....	33
Goring, "Elastic Cloth" Circular of 1857.....	71
Gowin, Lucy C., "Working in Rubber Factory".....	72
Grass to Grow with Rubber.....	347
Gravel, J. C. L., Death of.....	89
Great Britain, India Rubber Trade in, 37, 95, 150, 209, 319, 379, 446, 507, 559, 622, 675	
Britain, Rubber Machinery Manufacture Increased in.....	675
Britain's Commerce in Rubber Goods.....	152
Exports of Rubber Manufactures.....	561
Rubber Production of Her Possessions.....	623
Tropical Gardens.....	591
Economy of the Larger Tires, The. (Editorial)	1
Loss to Brazil, A. (Dr. Jacques Huber).....	282
Gross-Lichterfelde, Rubber Testing at.....	267
Growing Rubber in Ohio.....	645
Guatemala, Chile Exports Increasing.....	325
Decrease of Rubber Exports from.....	325
Some Neglected Nearby Markets.....	641
Guayule, Correction of Error.....	20
Extraction, Discovery of.....	135
Hunting by Automobile.....	471
Made Marketable by William Appleton Lawrence.....	135
Receipts, Marked Drop in.....	631
The Rubber Trade's Debt to.....	109
Guiana, British, Cultivation <i>Hevea</i> , <i>Funtumia</i> , etc.....	347
British, Growth of Rubber Trees, Balata, etc.....	680
<i>Hevea</i> Tapping Results in.....	272
Notes from.....40, 155, 212, 324, 386, 449, 515, 571, 681	
Report, C. K. Bancroft.....	626
Weather; Larger Exports.....	681
Dutch, Letters re Plantations.....	99, 211
Dangers of Balata Gathering.....	293
Notes from.....324, 513, 571, 680	
French, Balata in.....	572
Gummi-Zeitung, Prize Offer.....	39

H

Hammer, Jacob, Death of.....	434
Hard Rubber Propellers for Airships.....	153
Hartford, Rubber Plantation in, Boiler Room.....	141
Harvey, J. C.—Pará Rubber in Mexico.....	7
Has Successful Synthesis Arrived? (Editorial)	525
HEELS AND SOLES—	
Balata Soles for Leather Shoes.....	151, 425
Filler for Soles.....	17
Heels and Soles with Quarter Tips.....	22
Insoles for Cold Feet.....	548
Leather Scrap and Rubber Soles for Leather Shoes.....	425
Rubber Heel with Balata Plug.....	419
Heels as Diamond Gatherers.....	292
and Soles Required in Senate.....	399
Soles, Increasing Popularity of.....	486
Various Non-Leather Soles.....	603
"Wingfoot" Rubber Heel.....	608
Heilbut, Samuel, Death and Will of.....	435, 561
Heise, George, Death of.....	434
Help, A Genuinely Helpful Sort of. (Editorial)	338
<i>Hevea</i> and <i>Funtumia</i> Results in Gold Coast Report.....	679
Coagulation and Strength of Rubber.....	600
Culture.....	352
in Mexico..... (By J. C. Harvey)	7
in Trinidad—Two Species.....	155
Last Four Articles of Dr. Huber on.....	407
Latex, Coagulation of by Smoking.....	118
Latex Coagulation; Its Bearing on Rubber Strength.....	600
Only Trees of, in Panama.....	415
Paper by H. E. Potts.....	14
Planting in Uganda.....	538
Planting Successful in Mexico. (Editorial)	4
Rubber Notes from British Guiana.....	40
Tapping in British Guiana, Results of.....	272
Highway, Lincoln.....	246, 303
Hirsch & Co., Adolph, as Planters.....	10
Hodgman, George B.—Address to Rubber Club of America.....	416
Hofeller, Theodore..... (Portrait)	366
Hoff, Kommerzienrat Louis..... (Portrait)	323
Holidays, The Demoralizing Force of.....	528
Homes for Factory Workers.....	305
Hood, George H., Last of Boston Pioneers.....	167
Hood, George H., Death of..... (Portrait)	194
Hopkins, Alfred, Death of..... (Portrait)	367
Horn Bulb.....	6, 391
Hose and Cable, Armoring Machine for.....	499
Clamp, New.....	499
Coupling, Standard.....	430

Fire, Specifications for.....	292
Flexible Metallic.....	142
for Carrying Gasoline.....	80
Garden or Lawn, Sensible Size for.....	288
Rack, Convenient.....	91
Rubber, in Machine Shop and Foundry.....	125
Use of in Cementing Wall Cracks.....	34
Testing, Buffing Wheel for Use in.....	377
Woven, Cobb's Machine for Coating.....	556
Hospitals, Tire; The Growing Popularity of.....	543
How the Rubber Country Served the Colonel.....	462
Huber, Dr. Jacques.....	62, 282, 570
Dr. Jacques, Death of..... (Portrait)	308
His Busy and Useful Life..... (His Grave)	348
In Commemoration of.....	627
Last Four Articles on <i>Hevea</i>	407
Mme. Sophie Müller, Leaves Pará.....	570
Hünicke, Capt. Felix H., Death of..... (Portrait)	23

I

Ice Bag of Rubber with Textile Lining.....	307
Bag, Water Bottle and Fountain Syringe, Combination.....	497
Importance of the Soldier's Shoe. (Editorial)	640
Importation, Rubber, Direct from Singapore.....	53, 215
Imports of Crude and Waste Rubber, Comparison of.....	375
Rubber, of the United States—Statistics of.....	49, 105, 161, 217, 278, 334, 394, 457, 521, 578, 633, 688
Industry, Rubber, Future of, on Upper Amazon.....	643
Rubber, in Brazil and the Orient.....	652
of Germany.....	677
Incidental Injustice of Justice..... (Editorial)	463
Incorporations.....	27, 84, 140, 199, 254, 313, 372, 439, 496, 554, 614, 668
INDIA RUBBER WORLD at London Exhibition.....	508
Booth at London Exhibition.....	590
Follows Uptown March.....	166
Trophy for London Exhibition.....	248
Trophy for Batavia Exhibition.....	510
Twenty-fourth Anniversary..... (Editorial)	1
Indicator, Surface Speed.....	94
Indo-China, French, Cultivation of Rubber in.....	680
Inflation of Tires, Proper.....	16
Inhaler, DeFord Nasal Somnoform.....	80
Injunction Against Vulcanizer Makers.....	441
Inscription Sales; Description, etc.....	186, 266
Insect Pests. (British Guiana Correspondence)	515
Insole for Cold Feet.....	548
Instruction in Rubber Industry for Employees.....	304
Insulated Wire and Cable.....	498
(Lecture by Mr. Middleton)	
Wire Manufacturers, German, Sales Association.....	96
Insulating Gloves, Leather Faced.....	378
Insulation, Molded, Electrical and Plastics.....	619
(Book Review)	
of Electric Conductors, Action of Mine Water on.....	365
Rubber, Analysis of.....	379
Insulating Machine, New Six-Die.....	12
International Commercial and Industrial Association Congress.....	527
Congress of Tropical Agriculture.....	676
Inventive Genius, Latest Exploit of. (Editorial)	339
Investments, British, Abroad.....	561
Ironclads, Will They Become Rubberclads?.....	281
(Editorial)	682
Iron-Oxide Paint for Metal Work.....	167
Is Rubber Headed Toward Higher Levels?.....	53
(Editorial)	
Singapore to Be Future Rubber Market?.....	53
(Editorial)	
Italy Building Dirigible Balloons.....	266
Tariff of, on Rubber Goods.....	182

J

Japan a New Pacific Source of Rubber.....	384
Insulated Wire Companies in.....	385
Large Cotton Order from.....	674
Rubber Trade in.....98, 269, 449, 624	
Tariff of, on Rubber Goods.....	181
Japanese Planters in Dutch East Indies.....	156
Jar, Air-Sealed Vacuum.....	607
Java and Sumatra Acreage Compared.....	451
New Agricultural School in.....	100
Rubber Exports of.....	679
Traub Memorial Laboratory at Buitenzorg.....	678
Jaw Brace, Rubber.....	678
Jelutong and Methods for the Separation of Its Resins.....	481
Jump Stands, Rubber Plummets for.....	670

K

Kahn Law a Loose Piece of Legislation.....	53
(Editorial)	
"Kewpie," Rubber.....	263
Kid's Combination Set.....	128
Kincaid, Col. Henry L., Address of, at Annual Meeting of Rubber Club.....	418
"Koolbite" Teething Toy.....	34
Kornit Co., Liquidation of.....	663
Kuala Lumpur, Vulcanizing Plant at.....	451

L

Labor Conditions Improving in British Guiana.....	324
Problems in German East Africa.....	41

Shall It Constitute Privileged Class?.....	526
(Editorial)	
Union, Charles W. Eliot's View of the.....	282
Laboratory, Dr. Dannerth's Plan for Co-Operative.....	257
of Dr. Carlos de Cerqueira Pinto.....	63
Practice, India Rubber..... (Book Review)	421
Traub Memorial, at Buitenzorg, Java.....	678
Wash Bottle.....	497
Labrador, Rubber Coats at Niagara and in.....	519
the Rubber Dealer's Paradise.....	660
Lamp Black Nomenclature.....	37
Landolphia, Decorticator for.....	556
Lamp, Motor, with Rubber Body.....	144
Portable, Electric.....	166
Landolphia <i>ovariensis</i> and <i>Heudeloti</i>	44
<i>ovariensis</i> , Pounded Rubber from.....	567
Lange, Algot, Returns to United States.....	671
Latest Exploit of Inventive Genius. (Editorial)	339
Latex, Coagulation of.....	507
(Review of Mr. Barritt's Paper)	480
Treatment in London.....	135
Lawrence, Wm. Appleton, and Guayule.....	686
(Portrait)	
Lead Compounds Abundant in United States.....	340
Sublimed White.....	284
Lecture by Dr. E. Marckwald, on Rubber.....	562
Lectures, Rubber, in London; Course of Ten.....	434
Lee, J. Ellwood, Death of..... (Portrait)	607
Legging, Waterproof, New.....	53
Legislation, A Loose Piece of..... (Editorial)	98, 463
Automobile.....	283
Perennial Making of Laws..... (Editorial)	461
Banking Act and Crude Rubber Financing.....	463
(Editorial)	
Corporation, Injures Investors.....	192
for Fumigation of Fabrics and Rubber.....	526, 549
Discriminatory, Favors Labor.....	649
New Shipping Bill Helps Trade.....	463
Retaliating on the Pedestrian..... (Editorial)	463
The Incidental Injustice of Justice.....	463
(Editorial)	
Lewis, George A., Death of..... (Portrait)	251
Bequests.....	309
Lewis & Peat's Chart.....	350
Liability Act, Employers', in California.....	429
of Railroads for Lost or Damaged Goods.....	659
Library of Bayer Co. Transferred.....	564
License Fees for Automobiles, 1913 and 1914.....	484
Life Preserver, New French.....	266
Saving Potentialities of Rubber.....	111, 256
Lightning, Rubber Coats as Protection from.....	558
Lincoln Highway.....	245, 303
Lindquist, Hon. F. O., Remarkable Bill of.....	192
Lindsey, John D., Death of.....	368
Liquid Core Golf Ball, Bursting of.....	611
Liquidation of Kornit Co.....	663
Literature of Rubber.....	221
Litigation—Poel and Arnold Judgment Affirmed.....	365
Vulcanizer Company.....	441
Littleton, Martin D.—Address at Rubber Club Banquet.....	226
Loan, Brazilian.....	63, 513, 528
Lobato, Dr. Manuel, at Pará Rubber Congress.....	121
Locomotive Building, Rubber in.....	563
London, French Syndical Chamber of Rubber Manufacturers to Exhibit in.....	151
Low Grade Stocks of Crude Rubber in.....	380
Reduction in Dock Rates.....	321
Rubber Lectures in.....	562
Rubber Show in June.....	398
Show, India Rubber World at.....	508
Treatment of Latex in.....	480
Loose Piece of Legislation, A..... (Editorial)	53
Lost or Damaged Goods, Liability of Railroads for.....	659
Lubricating Box for Calender Rolls.....	557
Lyne, Dr. R. N., on Standardization of Rubber.....	33, 384
Lyrolit, Celluloid and Galalith Displaced by.....	150

M

MACHINES, MILL APPLIANCES AND DEVICES—	
Adamson's Straining and Refining Machine.....	543
Armoring, for Hose and Cable.....	94
Automatic Pneumatic Tire Building.....	93
Balata Belting Machines.....	259
Bead Forming Machine (Stevens).....	672
Belt Making.....	259, 673
Blankets, Printers', Resurfacing.....	616
Brake, Magnetic Clutch and.....	500, 674
Brazilian Smoking Machine for Plantation Rubber.....	431
Buffing Wheel.....	377
Cable and Hose, Armoring Machine for.....	94
Calculating Machine; Slide Rule, for Rubber Workers.....	536
Calender, Balata Belting.....	259
Roll, Lubricating Box for.....	557
Tension Device for.....	616
Cement, Making and Use of.....	472
Cell Drying.....	145
Clamp, Hose.....	499
Clothes Wringer, with Pneumatic Roller.....	12
Clutch and Brake, Magnetic.....	674
Dodge Friction, with Safety Devices.....	672
Magnetic, as Safety Device.....	500
Coagulating Machine.....	432
Machine, Norzagaray's.....	558
of J. S. Da Costa.....	326

Coating Fabrics, New Method.....	208	Tire.....	673	Vitalic Clincher Casing for.....	669
Woven Hose, Cobb's Machine.....	556	Vulcanizing, Steam.....	146	Motorcycles for Rural Postmen.....	562
and Spooling Wire.....	558	Vulcanizing Footwear.....	444	Motor Truck Fender Ordinance.....	111, 208
Cobb's Machine for Coating Woven Hose.....	556	Washing, Sheeting and Slicing.....	317	Truck, Gaining Better Mileage from the.....	5
Collapsible Core for Tire Building.....	145	Wash Reclamation, Machine for.....	207	Reduces Cost of Farm Produce.....	443
Core for Tires, "Duplex".....	621	Welding Compounding Ingredients, Machine for.....	674	Cost of Street Cleaning.....	438
Rewinding Shaft.....	499	Tires, Machine for.....	617	Vehicles, Germany Opposed to Renting.....	323
Combs, Pressed Rubber Die.....	615	Wheel Building.....	377	Mozambique, Ceara Rubber in.....	
Compress, Giant Magnetic.....	557	Wire Coating and Spooling.....	258	(R. N. Lyne Report) 33	
Curing Molds.....	501	Multiple Insulation Head.....	673	Muller, Dr. Lauro Welcomed Home.....	122
Cutting Gaskets.....	472	Wrapping Ties.....	13, 94, 145, 205, 258, 317, 377, 673	Museu Goeldi, Experiments in Smoking, etc.....	62
Rubber Stock, Shear for.....	502	Wringer, Clothes, with Pneumatic Rolls.....	12	Goeldi Zoological and Botanic Gardens.....	170
Detectorphone for Land.....	556	Machine Shop and Foundry, Rubber Hose in.....	125	Museum, Commercial, Opened in Brazil.....	381
Detectorphone for Location Machine Tires.....	134	Troubles and the Detectorphone.....	134		
Dies for Pressed Rubber Combs.....	615	Machinery, Rubber, Manufacture of, Increased.....	675		
Dodge Friction Clutch with Safety Device.....	672	in Great Britain.....	496		
Double Taping Machine.....	444	Mackintosh, W. M., Dines His Friends.....	496		
Dyeing Machines, Cell.....	145	Madeira-Mamorá Railroad.....	169, 404		
Footwear, Insole Manufacturing Machine.....	673	Magnesia and Earthy Fillers for Rubber, United States Supply of.....	686		
Vulcanizing Machine.....	444	Magnetic Clutch and Brake with Flexible Coupling.....	674		
Gaskets, Machine for Cutting.....	377	Clutch as Safety Device.....	500		
Giant Magnetic Compress.....	557	Coupling, Giant, for Rubber Mill.....	557		
Gyrator Sifting Machine.....	499	Make Up, Theoretical, Rubber in.....	443		
Heavy and Cable Armoring Machine.....	404	Malaya and Standardization.....	267		
Clamp.....	409	Experimental Plant Installed.....	70		
Testing, Buffing Wheel for.....	377	Rubber Conditions in.....	186		
Woven, Cobb's Machine for Coating.....	556	Cultivation in.....	478		
Wrapping Machine.....	673	Exports of.....	154, 210, 238, 451		
Hydraulic Press, Ramless, for Tire Filling.....	146	Planting (Acreage and Output).....	678		
Tire Press.....	318	Malayan Peninsula, Cultivation of Rubber on.....	478		
Indicator, Surface Speed.....	94	Mallet, Handy Rubber.....	92		
Insulating Machine, New Six-Die.....	12	Manaos and Pará—Statistics for 1913.....	405		
Insulation Head for Footwear Machine.....	673	Experimental Station for Rubber Culture.....	644		
Keystone Sifter and Rewinder.....	93	Manders, A. Staines.....	560		
Lubricating Box for Calendar Roll.....	557	Mandacá in Brazil.....	10		
Magnetic Clutch and Brake.....	674	Glazovii Tapping in British Guiana.....	340		
Clutch as Safety Device.....	500	Shipping.....	298		
Compress, Giant.....	557	129 Varieties of.....	110, 123		
Mendes Machine for Smoking Rubber and Its Product.....	346	Manufacturers, Rubber, The.....	121		
Mixing Machine.....	616	Manufacturing Industry in Brazil, Rubber.....	224		
Molding Machine.....	673	Statistics (Rubber) in Next Census.....	284		
Molds, Quick Curing.....	501	Marckwald, Dr. Eduard, Lecture on Rubber.....	686		
Tire.....	673	Market for Compounding Ingredients and Chemicals.....	239		
Norzagary's Coagulator.....	558	Future, Singapore as.....	53, 68, 116, 201, 209, 462		
Nozzle Duo, Combination.....	262	New, Opened by Panama Canal.....	229		
U. S. A. Combination.....	180	Markets, Some Neglected Nearby; Colombia.....	229		
Patch Clamp.....	396	Marshall, Vice-President, in His Automobile.....	666		
Plastimeter (Rubber Testing Instrument).....	11	Maroni River, Canoeing Up the.....	293		
Pneumatic Tire Building Automatic Machine.....	93	Massage Brush, "Sani Masseur".....	497		
Press, Hydraulic, for Filling Tires.....	146	Matchett, Thomas.....	371		
Hydraulic Tire.....	318	Mats, Rubber, Improvement in.....	268		
Ramless Hydraulic.....	146	Rubber, for Safety of Workmen.....	506		
Tire.....	673	Non-Slip Bath.....	203		
Printers' Blankets, Resurfacing.....	616	Running Board.....	442		
Productograph (For Recording Operation and Production).....	558	McBurney, Dr. Charles, Death of.....	134		
Puncture Finder for Motorist.....	335	McIlroy, William B., Death of.....	368		
Quick Curing Molds.....	501	Measuring the Appetite, Rubber Device for.....	374		
Ramless Hydraulic Press.....	146	Meat, Dried (Xarque) and Fresh (in Brazil).....	346		
Reclamation of Rubber Waste, Machine for.....	90	Mechanical Rubber Goods Testing Conference.....	484		
Recording Instrument—Productograph.....	558	Memorial to Dr. Melchior Treub (Buitenzorg Laboratory).....	678		
Refining and Straining.....	543	Metal, Process for Attaching Rubber to.....	14		
Resurfacing Printers' Blankets.....	616	Work, Iron-Oxide Paint for.....	682		
Rewinder and Sifter, Keystone.....	93	Metallic Hose, Flexible.....	142		
Rewinding Shaft, Collapsible.....	499	Mexican Crude Rubber Co. Explosion.....	491, 611		
Slitting and.....	206	Mexico from the Inside.....	167		
Rubber Stock Cutting Shear.....	501	Hevea Planting Successful in.....	4		
Rule, Slide.....	636	Imposes Export Tax on Rubber.....	232		
Safety Device, Magnetic Clutch as.....	501	Our Trade with, Decreasing.....	99		
Shear, Rubber Stock Cutting.....	502	Situation in—Letter from American.....	682		
Sheeting, Slicing, Washing and.....	317	Tariff of, on Rubber Goods.....	174		
Sifting Machine, Gyrator.....	499	Troubles of—American Views of.....	184, 351		
Six-Die Insulating.....	13	Use of Motor Cars in War.....	462		
Slitting.....	318	Use of Rubber Tires in.....	682		
Slicing, Washing and Sheeting.....	317	Mileage, Gaining Better, from the Motor Truck.....	5		
Slide Rule for Rubber Men.....	536	Unusual Tire.....	235		
Slitter and Rewinder, Keystone.....	93	Milk Products, Lyrolit, Galalith.....	150		
Slitting and Rewinding.....	206	Will, Inside a Comprehensive Rubber.....	494		
Smoking Machine.....	346	Mineral Matter in Rubber Compounds.....	112		
Sole-Laying Machine, (Goodyear Twin).....	472	Mine Water, Acid Action of, on Insulation.....	365		
Sole (In-So) Making Machine.....	673	Mining, Uses of Rubber in.....	285		
Solid Tire Machine.....	13, 376	Minor but Vastly Popular Rubber Sort.....	581		
Speed Indicator Surface.....	94	Minstrel Show by Rubber Men.....	373		
Spooling Wire, Coating and.....	258	Mixed Commission Report on Brazil Rubber Crisis.....	408		
Sprayer, "Four Oak".....	616	Consignments of Plantation Supplies.....	647		
Spreading Machine.....	674	Machine Machine, Illuminating Manual Labor.....	616		
Steam Vulcanizer.....	146	Main Rubber Plantation, Pará.....	401		
Stock, Rubber, Cutting Shears.....	501	Mold, Hand.....	301		
Straining Refining and.....	512	Tire, Strating and Vulcanizing.....	301		
Suction Attachment for Punch Presses.....	377	Old Curing.....	501		
Surface Seal Indicator.....	616	Molded Electrical Insulation and Plastics.....	619		
Tension Device for Calendar.....	616	(Book Review) 619			
Testing Instrument for Rubber Plastimeter.....	11	Mold, Rubber Co. Making Crude.....	437		
Tire Core, Collapsible.....	145, 621	Moorhouse Henry P., Death of.....	23, 37		
Filling, Hydraulic Press for.....	146	Morris, Edwin S., Death of.....	664		
Mold.....	673	Morse, Albert T., Death of.....	194		
Press, Hydraulic.....	318	Mold and Accessory Manufacturers' Association, Traffic Service.....	660		
Presses.....	673	Exports to South Africa.....	24		
Tread Molds for Analyzing Stud.....	674	Cars, Use of, in War in Mexico.....	462		
Wrapping Machine.....	673	New Use for Rubber on.....	173		
Wrapping, *13, 94, 145, 205, 258, 317, 377, 673		Motorcycle, Pannier for.....	497		
Tires, Pneumatic; Automatic Machine for Building.....	93	Possibilities of, for Post Office.....	640		
Puncture Finder.....	335	Tires, New Work for.....	4		
Solid Machine for Building.....	13, 376				
Triple Gang Machine for Weighing Ingredients.....	674				
Tubes, Rubber, Machine for Forming.....	207				
Tubing Machine, Double.....	445				
Vulcanizers for Car Owners.....	445				

Fastening for Aviators.....	307
The Pig with Extreme Lining.....	307
in the "Moose".....	343
Egg Testing.....	343
Repair Construction.....	343
Military.....	343
Plastics for the Rubber Industry.....	343
Spot for the Rubber Industry.....	343
Strips for Sealing Window Glass.....	343
Rubber that Protects the Ground.....	343
Running Board for Motor Cars.....	343
Board with Rubber Strip.....	343
"Sani-Masseur," The.....	343
Sanitary Rubber.....	343
"Sanitor," The.....	343
Slack Sewer Pipe.....	343
Shirts and Shirts of Rubber.....	343
Soft Rubber Wood.....	343
To Make Your Rubbers Stick.....	263
Protect Gas Tubing.....	343
Transparent Pottery, Part A.....	343
June-A-Phone, The.....	343
"Unelk" Rubber Curtain Supports.....	343
Waterproof Coat for the Horseman.....	343
Covers for Automobile Seats.....	343
Garments for the Sportsman.....	343
Rubber Heels.....	343
Wire Wheels and Quick Tire Changes.....	343
Woman's Rubberized Velvet Top Shoe, A.....	343
Wood and Rubber Block Tire, A.....	343
New Work for Motorcycle Tires..... (Editorial)	4
Zealand, Rubber Tires.....	178
Newspaper, "The Goodyear".....	33
Niagara and Labrador, Rubber Coats at.....	519
Nigeria, Rubber Cultivation in.....	45
Nineteen Thirteen in the Rubber Trade..... (Editorial)	165
Nipples, German, Excluded by France.....	97
Nitrogen Compounds, Influence on Vulcanization.....	650
Nitrosite Combustion, Determination of Rubber by.....	649
Nomenclature of Lamp Blacks.....	37
No Psychology in the Automobile Trade..... (Editorial)	581
North British Rubber Co., Long Term of Service with.....	448
American Banks in South America.....	583
Norwegian's Combustion.....	558
Nozzle, Dux, Combination.....	262
U. S. A.....	189

O

Obalski, Xavier W..... (Portrait)	28
OBITUARIES	
Baker, A. C.....	367
Bertsch, Paul E.....	24
Connery, John C.....	664
Cooke, Henry G.....	309
Currier, G. O.....	613
Davis, James L.....	89
Day, Asa Wilton.....	251
De Fries, Frank.....	664
Ford, J. Howard..... (Portrait)	367
Forsyth, J. H..... (Portrait)	434
Gravel, J. C.....	89
Hammer, Jacob.....	434
Heilbut, Samuel.....	435
Heise, George.....	434
Hood, George H..... (Portrait)	194
Hopkins, Alfred..... (Portrait)	367
Huber, Dr. Jacques..... (Portrait)	308
Humick, Captain Felix H..... (Portrait)	23
Lee, J. Ellwood..... (Portrait)	434
Lewis, George A..... (Portrait)	251
Lindsey, John D.....	368
McBurney, Dr. Charles.....	134
McElroy, William B.....	368
Moorhouse, Henry P..... (Portrait)	23
Morris, Edwin S..... (Portrait)	664
Morse, Albert T.....	194
Page, Eben Blake.....	134
Paige, Allan W.....	24
Pelinger, George.....	24
Porta, Terencio.....	644
Roberts, Addison F.....	89
Shepard, Mrs. Frederick M.....	309
Teale, Robert E. J. C.....	24
Van Vliet, Clinton..... (Portrait)	309
Vianna, Dr. Gaspar..... (Portrait)	644
Vitt, Benjamin F.....	194
Westinghouse, George.....	368
Whitmore, George P..... (Portrait)	308
Woodford, Leon M.....	251
Ogasawara Islands—A New Pacific Source of Rubber.....	343
Ohio, Growing Rubber in.....	645
Okonite Co., The—Cable Endurance.....	315
Oldfield, Barney, Wins Race at Detroit.....	82
Olympia Motor Show, 1913.....	1
"One of the Five Largest Producers".....	
Opportunities, Foreign Trade..... 62, 115, 172, 248, 311, 368, 441, 549, 631, 646	
Colombia.....	245
Ecuador.....	445
European War America's Opportunity..... (Letter)	682
Guatemala.....	641
Patana.....	413

*Illustrated.

War the Opening Door..... (Editorial)	638
Orange, Osage, in "Ohio Rubber".....	646
Ordinance, Fender, for Motor Trucks.....	111
Organizations, Commercial, in Germany.....	509
Orient and Brazil—Rubber Production Comparison.....	652
Osage Orange in "Ohio Rubber".....	646
Output, Federated Malay States, Rubber.....	154, 210, 238
Malaya, and Acreage.....	678
Overproduction of Rubber, English Viewpoint.....	508
Over-Size Tires..... 1, 4, 5, 64, 127	

P

Pacific Coast, Rubber Trade on..... 19, 79, 132, 190, 246, 304, 361, 429, 489, 546, 606	
Packing Rubber, Special Boxes for.....	212
Plantation Rubber, Adulteration in.....	506
Packings, Tuck's, Originator of.....	39
Page, Eben Blake, Death of.....	134
Paige, Allan W., Death of.....	24
Pails, Rubber, Improvements in.....	671
Paint, Iron-Oxide, for Metal Work.....	682
Panama Canal, New Market Opened by..... (Editorial)	462
Only Have Trees in.....	415
Tariff of, on Rubber Goods.....	178
Trade, Shall We Lose?.....	413
Papua, Rubber Cultivation in.....	45
Pará, Agricultural Instruction in State of.....	627
and Amazonas, Boundary Dispute Between.....	644
Manaus, Statistics for 1913.....	405
Plantation Rubbers, Brazilian Comparison.....	171
Arbor Day in.....	627
Congress, Story of.....	57
Experiments in Smoking at Museu Goeldi.....	62
Laboratory of Dr. Pinto at.....	63
Museu Goeldi Zoological and Botanic Gardens.....	170
Port of.....	403
Rubber Congress in..... 41, 57, 67	
Trade, British.....	562
Tree Festival in.....	627
Parahyba Device for Aviator.....	371
Parcel Post, Tires by.....	440
Paris, Fourteenth Automobile Salon at.....	265
Patch Clamp, High Pressure.....	396
Repair.....	307
Patent Law, Kahn.....	53
Law on Golf Balls, Value of English.....	97
Patents and Trade Marks, Registration in China.....	115
Recent, Machinery.....	673
Rubber..... 46, 101, 157, 213, 273, 329, 389, 453, 516, 573, 628, 683	
"Pavea," Synthetic Rubber..... 471, 525, 559, 622, 675	
Pavements, Rubber..... 127, 321, 447	
Pellinger, George, Death of.....	24
Pen, Fountain, The Making of.....	533
Fountain, Transparent.....	548
Pneumatic, for Plastics.....	670
Pena, President, of Argentina, and His Book..... (Editorial)	528
Penang, Botanic Gardens at Singapore and.....	100
Peradeniya, Botanic Gardens.....	618
Perennial Making of Auto. Laws, The..... (Editorial)	283
Persistence of Rubber, The..... (Editorial)	55
Pertanian Montana, Rubber Gathering in.....	406
Philanthropy, Turning It Into Profits..... (Editorial)	399
"Phlogem" Telephone Disinfectant.....	670
Pick, "Tyre-Pick," for Pebbles, etc.....	12
Pinto, Dr. Carlos de Cerqueira, Laboratory at Pará.....	63
Progress, Last of the Boston..... (Editorial)	167
Pitcher, Franklin W., 80th Anniversary..... (Portrait)	301
Plantation Companies, English, Capital of.....	380
Continental Situation of.....	686
Machinery, Coconut Cultivation and.....	354
of General Rubber Co., Sumatra.....	113
Rubber, Acreage in Far East.....	678
Adulteration of.....	506
Various Ideas on Standardizing.....	505
Various Views of.....	236
Brazilian Comparison of Pará and.....	171
Fine Hard, from Eastern Plantations.....	379
Is It Overprepared?.....	156
Methods for Producing.....	74
Supplies—Mixed Consignments.....	647
Para and African.....	237
Planting Suggestions.....	506
Planting.....	147
Planting.....	44
Reducing Production Proposed.....	43
Substitutes for.....	156
Substitution of Wood in.....	506
Will Eastern Planters Try a Corner?..... (Editorial)	3
Plantations, Rubber, in Mexico, Dying.....	325
Will Eastern Try a Corner?..... (Editorial)	3
Planting Coffee, Pará Rubber and Cocoa in.....	523

Hevea in Mexico, Successful.... (Editorial)	4
Notes..... 43, 100, 154, 271, 328, 387, 451, 513, 567, 678	
Rubber, in Central America Discouraged.....	116
Experiments in British Guiana.....	40
in Cochín China.....	42
in Far East.....	326
Plastics, Molded Insulation and. (Book Review)	619
Pneumatic Pen for.....	670
Plastometer, a Rubber Testing Instrument.....	11
Plug, Pneumatic, for Pneumatic Tires.....	28
Plumbers' Cleaning Device.....	142
Cleaning Device for Home Use.....	443
Plummet, Rubber, for Jump Stands.....	670
Pneumatic Pen for Plastics.....	670
Pool & Arnold Judgment Affirmed.....	365
Poisoning, Alleged, at Russian Rubber Factory.....	509
Bichloride Mercury, Prevention.....	111
Polyprene Sulphide in Vulcanization.....	112
Pontianak Process, New.....	198
Port of Pará.....	403
Porta, Senhor Terencio, Death of.....	644
Post Office, British, Tries Motorcycles.....	562
Office, Possibilities of Motorcycle for..... (Editorial)	640
Potts, H. E.—Paper on Hevea.....	14
Pounded Rubber, from <i>Landolphia ovariensis</i>	567
Power Saving Plans of Henry Ford.....	445
Preservation of Rubber with Dry Flour.....	24
Presses (See Machinery).....	
Price Solid Tire Wrapping Machine.....	13
Prices, Crude and Reclaimed Rubber, Conform Rubber, Are They Headed Toward Higher Levels?..... (Editorial)	167
Disastrous Effect of Fall in.....	511
Effect, in German Africa, of Drop.....	625
Fluctuating, Due to War..... (Editorial)	637
London Correspondence on.....	95
Net, in London, for Plantation Rubber.....	321
Real Net, Advantage of.....	305
Reasons for Drop in..... (Editorial)	2
"The Worst Over".....	511
Scrap Rubber, Too High..... (Editorial)	109
Tire—No Cut Imminent.....	30
Prince Arthur of Connaught..... (Portrait)	321
Printers' Blankets, Machine for Resurfacing.....	616
Prize, "Gummi-Zeitung" Offer of.....	39
for Description of Smoked Rubber.....	191
Motor Trucks (Austria).....	269
Offer, INDIA RUBBER WORLD, Batavia Exhibition.....	510
INDIA RUBBER WORLD, London Exhibition.....	248
Prizes Awarded at London Exhibition.....	587
for Tire Upkeep.....	429
List, for Batavia Exhibition.....	569
Offered for Batavia Exhibition.....	625
for London Exhibition..... 222, 248, 447	
Problems, Some Rubber.....	14
Process for Attaching Rubber to Metals.....	114
Producers, One of the Five Largest. (Editorial)	583
Production of Sulphur.....	597
Plantation Rubber, Proposed to Reduce.....	43
by Brazilian Method.....	431
Rubber, English Viewpoint of Overproduction.....	508
Mr. Lampard's Views on.....	480
of British Possessions.....	623
World's, Lewis & Peat's Chart.....	350
World's, Wild and Plantation.....	67
Productograph, Production Indicator.....	558
Products, Addition, of Rubber.....	400
Profit Sharing Plan of Ford Co.....	320
Profits on African Rubbers Reduced.....	45
Progress, Civic, in Last Thirty Years..... (Editorial)	110
Technical, Affecting Rubber in 1913.....	563
Propellers for Airships, of Hard Rubber.....	153
Prospect and Retrospect—1913 in the Rubber Trade, and 1914..... (Editorial)	165
Psychology in the Auto, Trade, No.....	581
Pump, Automobile Tire, Automatic.....	12
Lift and Force, for Home Plumbing.....	443
Pumps (See Footwear).....	
Punch Press, Suction Attachment for.....	377
Puncture Finder for Motorists.....	235
Pure Shoe Bill.....	192

Q

Quartry of Plantation Rubber.....	44
Quarter Tips of Rubber on Leather Heels and Soles.....	22
Quotations, Rubber Company Shares..... 372, 437, 474, 555	

R

Railroads, Liability of, for Lost or Damaged Goods.....	659
Railway, Need of, for British Guiana.....	386
Madeira-Mamoré, Value of, to Brazil.....	404
Reasons for the Drop in Rubber Prices..... (Editorial)	2
Reclaimed and Crude Rubber Prices Conform.....	379
Rubber, Conditions in England.....	622
Paper by H. E. Potts.....	14
World's Annual Amount of.....	562
Rubber, Formic Acid for.....	400
Machine for.....	207
Thirty Years of Success.....	541

Real Seat of Fishing Rod, Rubber Eraser for.....	670	Settlement of the Best Promoter of Efficiency.....	154	World's, 1905 to 1913, from Amsterdam.....	408
Registration of Foreign Patents and Trade.....	118	Schlagmann, Siegmund.....	153	United States Rubber Imports, 49, 105, 161,.....	608
Marks in China.....	118	Shelton, George, with One Term.....	149	217, 278, 334, 391, 437, 521, 576, 639,.....	608
Renting of Motor Vehicles Opposed in Ger-.....	323	Sherrill, Reuben, Comp. Inc.....	422	Strong Rubber, The Business of.....	3
many.....	323	Sherrill, Reuben, Comp. Inc.....	422	Rubber, English Case.....	20
Repairing Tires, Popularity of Tire Hospitals.....	513	Sherrill, Reuben, Comp. Inc.....	422	Interesting Correspondence on.....	20
Tires, Tread Band for.....	513	Sherrill, Reuben, Comp. Inc.....	422	"Re-Rubber Lining".....	404
Republic Rubber Co. Club for Employees.....	81	Sherrill, Reuben, Comp. Inc.....	422	Restoration by Rubber Club of America.....	20
Re Rubber Thieving.....	464	Sherrill, Reuben, Comp. Inc.....	422	Stevens Bead Forming Machine.....	672
Resins, Method of Separating from Jelutong.....	481	Sherrill, Reuben, Comp. Inc.....	422	Stops, Walking, as Art to Temperance.....	442
Respirator Construction, Rubber in.....	143	Sherrill, Reuben, Comp. Inc.....	422	St. Louis, Cleaning Up.....	399
Restaurant for Factory Employees.....	16	Sherrill, Reuben, Comp. Inc.....	422	(Portrait, Philanthropy, etc.).....	399
Retaliating on the Pedestrian.....	463	Sherrill, Reuben, Comp. Inc.....	422	Stopper Secured to Hot Water Bottle.....	262
Retail Rubber Purchases Not Exchangeable.....	375	Sherrill, Reuben, Comp. Inc.....	422	Straits Settlements, Rubber Exports from.....	569
Retrospect and Prospect—1913 in the Rubber.....	165	Sherrill, Reuben, Comp. Inc.....	422	Street Cleaning Cost Lessened by Motor.....	438
Trade, and 1914.....	165	Sherrill, Reuben, Comp. Inc.....	422	Trucks.....	438
Review and Forecast, Ritter, Ritter & Co.'s.....	383	Sherrill, Reuben, Comp. Inc.....	422	Strike in Copper Mines Affects Belting Trade.....	130
of Crude Rubber Market.....	48, 104, 160, 216,.....	Sherrill, Reuben, Comp. Inc.....	422	Strips, Rubber, for Windows Instead of Putty.....	91
276, 332, 392, 456, 520, 576, 636,.....	687	Sherrill, Reuben, Comp. Inc.....	422	Sublimed White Lead.....	340
Rewinding Shaft, Collapsible.....	499	Sherrill, Reuben, Comp. Inc.....	422	Substitute, Brown Jaco.....	374
Rhode Island Rubber Trade.....	19, 77, 131, 189,.....	Sherrill, Reuben, Comp. Inc.....	422	to Chloride—Galalith and Lyrolite.....	150
245, 303, 359, 427, 487, 545, 604,.....	662	Sherrill, Reuben, Comp. Inc.....	422	Pneumatic Tire, Requirements of.....	55
Ridley, H. N., Resumes from Directorship.....	100	Sherrill, Reuben, Comp. Inc.....	422	Rubber—Facts.....	481
(Singapore).....	100	Sherrill, Reuben, Comp. Inc.....	422	Scarcity Caused by Golf Ball.....	664
Rims, Tire.....	250, 357	Sherrill, Reuben, Comp. Inc.....	422	Sulphide of Antimony, Golden.....	224
Rio de Janeiro, Rubber Exhibition.....	41, 120	Sherrill, Reuben, Comp. Inc.....	422	Sulphur Output of United States for 1913.....	537
Road, Lincoln Highway.....	245, 303	Sherrill, Reuben, Comp. Inc.....	422	Production, Method of.....	597
Roberts, Addison F., Death of.....	89	Sherrill, Reuben, Comp. Inc.....	422	Quantitative Determination of.....	112
Rodenbach, W. T.....	371, 438	Sherrill, Reuben, Comp. Inc.....	422	Supply in United States Plentiful.....	686
Roder Skating on Rough Roads.....	536	Sherrill, Reuben, Comp. Inc.....	422	Sumatra and Java Acreage Compared.....	451
Rolls, Calendar, Lubricating Box for.....	557	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rubber, for Tanning, Improvement in.....	376	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rothing, American, in Tripoli.....	99	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Roosevelt, Theodore.....	462, 570	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Running Board with Rubber Strip.....	497	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rubber, a Minor but Vastly Popular Sort.....	581	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Editorial).....	581	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Club of America, Action re Rubber Cargoes.....	667	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Afloat at Outbreak of War.....	667	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Announcement of Crude Rubber Condi-.....	667	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
tions.....	667	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Annual Meeting at Boston.....	416	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Arbitration Activity.....	483	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Fifteenth Annual Banquet.....	42	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Gathers Rubber Statistics.....	223, 249, 419	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Member United States Chamber Commerce.....	503	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
New Home of.....	19	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
New Members.....	663	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Nominations, etc.....	369	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Outing.....	582, 594	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Resolution on Rubber Stealing.....	20	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Tariff Information to Members.....	82	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Year Book for 1913.....	19	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Congress at Batavia.....	461	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Consumption, American.....	338	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Automatic Increase in.....	221	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Compared with Population.....	526	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
English.....	623	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
German Manufacturer on.....	526	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Goods in Commerce.....	103, 184, 236, 293,.....	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
362, 430, 508, 505,.....	599	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Manufacturing Co., Fifteenth Annual.....	433	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Meeting.....	433	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Growers' Association, London.....	171, 267,.....	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
383, 468,.....	476	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
in Celluloid Manufacture.....	476	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Industry in Brazil and the Orient.....	652	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Book Review).....	652	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Its Sources, Cultivation and Preparation.....	653	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Book Review).....	653	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Manufacturing Industry in Brazil.....	121	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Statistics in Next Census.....	124	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Scrap Too High.....	109	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Editorial).....	109	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Situation in Brazil.....	169	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
in Brazil, German View of.....	382	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Tariffs of Other Countries.....	168	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Trade Association, London.....	563	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Trade's Debt to Guayule.....	506	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Editorial).....	506	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Verb Transitive, Etymology of.....	506	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Works for the Human Interior.....	464	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Editorial).....	464	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rubbers; Clearly Labeled.....	23	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Editorial).....	23	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Running Board Mats, Rubber.....	442	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Russia, Aviation in.....	565	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
and Germany, Rubber Trade of, 1913.....	236	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Russian Government Orders Aeroplanes.....	674	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rutherford, W. O.....	424	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Portrait).....	424	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
S.....		Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Safety of Employees, Provisions for.....	485	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
of Workmen, Rubber Mats for.....	506	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Sailors Work Under Water.....	47	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Salaries of Corporation Officials.....	311	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Saloon, Foundrymen's Association Tries to.....	464	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Spanish.....	464	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Samoa, Development of Rubber Culture in.....	580	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Sand as Anti Skid.....	103	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
"Sanitor," Cleansing Device for Mouth.....	670	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
"Sani Masseur," Rubber Brush.....	497	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Sapium, Failure of, in British Guiana.....	515	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Schaffer, Frederick F.....	613	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Portrait).....	613	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
School, Agricultural (New) in Java.....	679	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rubber, Northern Polytechnic Institute,.....	88	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
London.....	88	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Twice-a-Week Rubber Lectures.....	304	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Scrap Rubber, Hydraulic Press for.....	109	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Rubber Market, English.....	508	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Too High.....	109	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
(Editorial).....	109	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Wellesley Girls Collecting.....	426	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Scraping, Effects on Manihot and Kickxia.....	340	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
Screen Door, "Dime Check" for.....	670	Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100
*Illustrated.		Sherrill, Reuben, Comp. Inc.....	422	and Java Increase Rubber Acreage.....	100



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TABLE OF CONTENTS ON LAST PAGE OF READING.**IN OUR TWENTY-FIFTH YEAR.**

IT seems to be a characteristic of the human mind to celebrate the progress of events at even periods of five years. The college graduate returns to the bosom of his Alma Mater on the fifth- tenth- twenty-fifth anniversary of his being turned loose upon the world; and similarly the domestic milestones that are believed to warrant particular festivities and an appeal to friends for unneeded articles of tin, wood, glass, etc., are located at even five-year intervals. Analogously, the INDIA RUBBER WORLD feels warranted in mentioning the fact that with this issue it enters upon its twenty-fifth year, for with the September number it finished twenty-four complete years not only of continuous publication but, what is more notable, of publication under the same ownership and editorship.

What tremendous developments have taken place in the trade during these twenty-four years! To be sure, the American rubber industry was by no means in its infancy in 1889, for it had been in existence for practically fifty years, and had made great progress and was consuming, all told, of rubber, gutta percha, scrap rubber, balata, etc., nearly 32,000,000 pounds and producing

manufactured products to the value of \$42,000,000 yearly. But during the last twenty-four years its growth has been five times as great as during the first half century; for last year—that is, for the twelve months ending with June—it consumed over 113,000,000 pounds of crude rubber and, including kindred products—gutta jelutong, scrap rubber, etc.—over 224,000,000 pounds; while the value of its manufactured product was probably in excess of \$225,000,000. Tires alone for that twelve months amounted to over \$100,000,000 in value, or two and a half times the entire rubber product of twenty-four years ago.

And the INDIA RUBBER WORLD has sought—and we think successfully—to be the mouthpiece of this great industry and to keep pace in its growth, approximately at least, with the growth of the American rubber trade. The first number of this paper, published in October, 1889, contained 21 pages of reading matter and 23 pages of advertising. During its first year it published 300 pages of text (an average of 25 pages per issue) and 366 pages of advertising. During the year just closed it published 656 pages of text (an average of nearly 55 pages) and 932 of advertising. If the trade and the paper both increase in the same ratio during the next twenty-four years the American manufacturers in 1937 will be using 1,568,000,000 pounds of rubber and kindred materials and will be making rubber goods of the value of \$1,125,000,000; and the INDIA RUBBER WORLD will have about 1,440 pages of reading matter for the year, or 120 pages per issue, and will carry during the twelve months about 3,000 pages of advertising. Here's hoping that this delightful condition may come about, with both the trade and the paper still under the same personnel as now.

THE GREAT ECONOMY OF THE LARGER TIRES.

THERE has been a growing belief among owners of motor cars, and particularly among users of motor trucks, that while the smaller tire could be procured at a less initial expense, economy really lay in the direction of the wider tire. The truth of this theory has never been brought out more impressively than in an article which appears in this issue, entitled "Gaining better mileage from the motor truck," which, together with the table of figures appended to it, gives the results of investigations covering the last two years carried on under the direction of the Automobile Chamber of Commerce. These investigations prove conclusively the great economy of the wider tire. The table gives a comparison of the mileage

secured in fifteen different instances with 4-inch tires and with 5-inch tires used on the same vehicle. It will be noted that in some instances the substitution of a 5-inch tire for a 4-inch tire increased the mileage secured over 300 per cent. The table shows an average increase in the cases under observation, where a 5-inch tire was substituted for one an inch narrower, of 58 per cent. for the front wheels and 123 per cent. for the rear wheels.

While this table shows simply the great economy from the standpoint of tire expense of the wider equipment, there must be added to this advantage the tremendous saving to the machinery of the motor when the wheels are equipped with tires in good condition rather than tires in various stages of dissolution.

REASONS FOR THE DROP IN RUBBER PRICES.

THE fluctuations in the price of crude rubber are always interesting, and to people who are buying and selling this commodity they are always important; but the phase of the matter which is of real significance is not so much the fact of the rise or fall in prices as the reason for it. If the reason for a noticeable drop proves to be one of a permanent character, it is obviously a matter of considerable concern to gatherers and producers of crude rubber. If it proves to be simply of a temporary nature, they need then feel no very great alarm.

Rubber prices have given rather an interesting exhibition during the present year. Reviewing briefly the course of Upriver Fine, we find that in January it ranged from \$1.02 to \$1.09; in February from 96 cents to \$1.03; in March from 88 to 96 cents, and in April from 78 to 89 cents. In other words, there was a distinct downward trend constantly in evidence, the lowest price of one month being practically the highest price of the next. The drop in average prices from January to April was about 22 cents a pound. Now the question is:—What was the cause, or what were the causes, for this uniform decrease in the price of crude rubber? There are probably several answers to this question. In the first place, there was the natural apprehension of the rubber manufacturer over the tariff situation. This would tend to make him extremely conservative in his purchases. And in the second place might be cited the increased cost of living, which made it necessary for the great body of consumers to give more careful consideration to their expenditures. It needs no proof to show that when beef costs 30 cents a pound a great many people are likely to buy fewer tires than when beef costs 20 cents a pound. When the necessities of life are ranging along the upper altitudes a very considerable

proportion of the community has to cut off many luxuries, and incidentally, a great many health-preserving articles that should be classed as necessities but which are generally counted among the luxuries—rubber shoes and rubber coats, for instance.

But there was another cause for this drop in rubber prices which has escaped general attention but which probably had as much influence as all other causes put together, and that was the great decrease in the consumption of rubber by the Akron mills during a period of six or eight weeks, beginning early in February and extending into April. It will be recalled that the Akron strike started about the 10th of February. It affected the mills in varying degrees, some of them being entirely closed and others working on greatly reduced tickets. Immediately following the termination of the strike there were disastrous floods in Ohio, which further affected the operation of some of the Akron mills.

Speaking in round numbers, Akron uses one-half of the crude rubber consumed in the United States, her share being about 25,000 tons a year. February and March would normally be busy months, particularly in the production of tires, and had it not been for the strike and the floods, it is safe to say that the factories of Akron would have consumed close to 6,000 tons of rubber from the middle of February to the middle of April. But during that time the Akron rubber industry was not operating at more than 50 per cent. of its normal capacity. In other words, about 3,000 tons of rubber which under normal conditions would have been consumed during that period remained on the market. This amounts to 6 per cent. of the annual consumption of the country and would be fully 25 per cent. of the rubber that would naturally be converted into goods during that period. This great decrease in demand for rubber would certainly account for the 20 per cent. lower prices in the early part of April as compared with those of four months before.

This contention that the Akron strike and flood had a marked influence on rubber prices is borne out by subsequent events, for immediately after the Akron factories got fully under way rubber prices began to mount. In May the range was from 81 to 92 cents; in June from 87 to 92 cents, and in August as high as 94 cents was paid for Upriver Fine. That is, about one-half of the loss during the four months from January to April inclusive was made up during the four months from May to August.

The causes for the low rubber prices of last spring appear, therefore, to be exceptional and temporary; and while, with the greater production of plantation rubber,

prices are bound to tend downward as the years go by, there appears to be nothing in the present situation or in the immediate future to indicate any continuous low level of prices.

THE BUSINESS OF STEALING RUBBER.

EVERY now and then the rubber trade wakes up to the fact that rubber stealing is still going on. It is not that more rubber is stolen, but some one of the stealers blunders and thus centers attention upon this profitable and secret phase of the rubber industry. Even then it is looked upon only as an incident.

As a matter of fact, however, the stealing of crude rubber has long since ceased to be incidental. It is a business—and a very serious business, too, for many manufacturers. It would seem, on the face of it, as if this were a practice that might readily be stopped, for crude rubber is not a commodity in general use. Its natural movement is through well defined channels, and when it is offered outside of them suspicion is at once created. The only people who under normal conditions would have crude rubber to offer are importers, brokers, and, in some cases, manufacturers who have a surplus stock. Anyone else, who tries to sell a few pounds or possibly a few hundred pounds of crude rubber, becomes, by the very nature of the circumstances, a suspicious person. Anyone who purchases such small offerings from unknown people must be aware that he is probably buying stolen goods.

Naturally, rubber that is secured at no expense—other than the infraction of such trifles as the moral and statute laws—is sold at a considerable concession in price. To whom is it sold? Find that out and the stealing of rubber can be stopped. Where there are thousands of workmen—not all of them scrupulously honest—the temptation to take a few pounds of unguarded rubber is bound sometimes to be too strong to resist; and it is impossible to keep close watch of this great army of employes. But the number of avenues through which this stolen rubber can be disposed of is comparatively small and more readily discovered. A list of workmen or rag-pickers or freight handlers who occasionally get away with a pound of rubber would be of no avail in stopping rubber stealing. But a list of the big firms which buy the aggregation of these pounds would show any stealings committee where to begin work.

WILL THE EASTERN PLANTERS TRY A CORNER.

THERE are rumors, coming by way of the European press and through other channels, that the Middle East planters, being very much dissatisfied with the prices which have recently ruled for plantation rubber, have decided to take concerted action “to restore plantation prices to their normal level.”

This gives rise to two questions: What is the “normal” price for plantation rubber? and, if purchasers will not give it how are the planters going to get it?

Speaking of rubber in general, it would be rather difficult to discover just what its normal price is. Many years ago the normal price for crude rubber was 25 cents, and for some years it remained under 50 cents. Two years ago it was between \$2 and \$3. At present the normal price may be located at about 90 cents for Pará, with plantation crepe about 15 per cent. lower.

In other commodities—at least those whose production and consumption have been on an established basis for many years, and where an increase in consumption is followed by a natural proportionate increase in production—it may very properly be said that there is a normal price; but the conditions in the rubber trade have been extremely unsettled for a number of years, the advent about ten years ago of the automobile, with its tire, increasing the consumption with extreme rapidity, while the maturing of plantation trees has now begun to increase the production out of all proportion to the natural increase in demand. So what the normal price of rubber will be five years or even three years from now is wholly a matter of conjecture.

But the planter's chief complaint is that his rubber is selling so far below Pará; and he proposes to correct this disparity. But how is he going to do it? Rubber manufacturers do not prefer Pará out of mere prejudice. Their only prejudice is to get the most they can for their money. And the planter's problem is simply to persuade the manufacturer that he can get as much out of plantation rubber as out of the product of the Amazon. Then he can get an equal price. The planters disclaim all intention of trying to effect a “corner,” but they say that they hope so to systematize the selling channels through which their rubber passes that prices will be materially advanced. It may be quite possible, of course, for them to improve their methods of salesmanship, but they can do this not by putting artificial restrictions on the sale of their

product, but rather by improving and standardizing its quality, and by such intelligent exploitation as will convince the purchaser that it really possesses the quality the planters claim for it.

One suggestion has been made, however, for temporarily limiting the production of plantation rubber which bears a very sensible aspect, and that is a suggestion that the planters refrain from tapping for a brief season—say for two weeks. This would temporarily reduce the market supply and thus probably increase the selling price. And in addition to that, it would undoubtedly be beneficial to the vast majority of plantation trees, most of which are tapped at an immature age. A respite of a few weeks from tapping would without question improve most of the trees and also the quality of rubber subsequently made from their latex. At any rate, here is a suggestion, the execution of which would tend to yield the planter a little better price for the time being, and would give him better rubber in the future.

But, viewing the plantation situation as a whole, the president of the Kepitigalla Rubber Estates expressed the right idea in his recent annual address to the stockholders when he said that the company was basing all its operations on the assumption that they were not going to get a very much higher price than that ruling at the present time. In fact, wise companies will base their operations on the assumption that they are going to get gradually lower prices. Plantation enterprises which have been well conceived and properly managed can afford to do this; and in the case of plantations which are laboring under any obvious disadvantages, either of excessive capitalization or of unfavorable physical conditions, it will in time probably be the ancient sad refrain of "the devil take the hindmost."

HEVEA PLANTING SUCCESSFUL IN MEXICO.

AN extremely interesting letter from Mr. J. C. Harvey, of Vera Cruz, Mexico, appears on another page of this issue, in which he recites his experiences in planting *Hevea* in that country. He describes the results obtained from a number of seeds secured from the botanical gardens in Singapore, the trees from which were six years old last spring. As they had then attained a circumference of between 19 and 26 inches, they were tapped, and with most satisfactory results. Samples of the rubber obtained have been sent to New York and pronounced equal to the best plantation product of the East.

Mr. Harvey says that the poorly developed heads, yellow foliage, atrophied branches and dead tops, not infrequently seen in the *Castilloa*, were entirely absent in the case of these *Hevea* trees; moreover, he pronounces the *Hevea* much less exacting in its soil requirements than the *Castilloa*. His opinion—based upon his years of personal observation—is that there are large areas in Mexico and also in Central America where, if territory is selected with proper care with reference to temperature and rainfall, the *Hevea* can be profitably cultivated.

As the question of *Hevea* planting in Mexico is one that has received a great deal of attention during the last decade, a widespread interest will be felt in the results of Mr. Harvey's experiments as given in this letter, and his optimistic conclusions will be most encouraging to other Mexican planters, who have long felt that *Hevea* culture in that country, under right conditions, had great possibilities.

NEW WORK FOR MOTORCYCLE TIRES.

PRODUCERS and manufacturers of rubber who are very anxious to see new avenues opened up by which its consumption can be materially increased will be pleased to hear of the enterprise of certain riders of motorcycles, who, if they have not found a new use for rubber, have at least discovered a way in which the rubber in motorcycle tires can be consumed with considerably greater rapidity. Every well-balanced man will remember the exhilaration he felt in the coasting days of his boyhood in the country, when the sled arrived at one of those raised places in the road technically known as "thank-you-ma'ams," which shot the sled with its passengers up into the air to come down again some distance farther down the hill—whether right side up or wrong side up no one particularly cared. Now the motorcyclists have found that they have the same agreeable sensation when coasting down hill on their machines and coming to these selfsame water-breaks; and "jumping-the-jumps" is reported as a motorcycle sport of growing popularity. If they are going rapidly enough the machine, with the rider, is projected into space to some considerable distance, 20 or 30 feet, as the case may be; and it is fairly obvious that when they reach the earth again the impact is a great strain upon the tire, and that many a tire which under normal usage might have gone on for another thousand miles is likely to come to grief, and thus release another new motorcycle tire from the dealer's stock.

Just how this new sport will affect the mortality rate among the riders it is yet too early to tabulate, but the effect on the tires is not open to question and is altogether to the satisfaction of the manufacturer.

Gaining Better Mileage From the Motor Truck.

During the past two years tire manufacturers and the trade papers have had much to say in regard to the comparatively poor mileage obtained from truck tires. It is the opinion of tire specialists that truck makers have been equipping with too light tires for the loads they are called upon to carry. Heretofore this has been more or less a matter of conjecture; but the concrete examples given below prove the wisdom and economy of adequate tire equipment.

It has been conclusively demonstrated that, next to the driver's wages, the largest single item in the cost of operation of a motor truck is the cost of tire replacements. This is even found to be the case in most electric commercial vehicles where the cost of keeping the batteries charged was for a long time considered to stand next to the driver's wages as an item of expense. For the past two years the subject of solid tire wear and destruction has been closely studied by the National Association of Automobile Manufacturers and its successor, the Automobile Chamber of Commerce, as well as by tire manufacturers and the heads of establishments which are large users of motor trucks, with the object of ascertaining the factors which have a direct bearing upon or control the mileage obtained from the various types and sizes of solid tires. As a result of these investigations tire manufacturers, as well as motor truck engineers, have come to the conclusion that by the adoption of proper methods of operation and the use of proper sized tires, the users of motor trucks can greatly increase their tire mileages and thereby cut the cost of operation and maintenance very materially.

The study of this question has included an investigation of the effects of paving conditions and topography in different cities of the United States from the Atlantic to the Pacific; the greater mileages obtained from solid tires of the same size and under the same loads in European countries; the effects of overloading and excessive speed; improper distribution of loads; diameter and shape of tires; inadequate tire equipment for load capacity, and several other factors bearing upon the subject. The most important of these, which relate to the wearing qualities of tires is, without doubt, the proper size of tires for the load which they are to carry.

It is quite evident that anything that will tend to materially increase the tire mileage will at the same time reduce the operating expense more than any other factor. Manufacturers offer guarantees on their tires of from 6,000 to 10,000 miles, giving an average guarantee of 8,000 miles. As a matter of fact, motor truck operators have not been getting this mileage out of their tires for the simple reason that they have been replacing worn out equipment with others of inadequate size. The average solid tire mileage in twelve principal American cities, derived from more than 150 reports on the tire equipment of various sizes of trucks, both gasoline and electric, as reported by the National Association of Automobile Manufacturers several months ago, is a little over 7,000 miles. In six of these cities the average was from 1,500 to 4,400 miles less than the average guarantee of 8,000 miles.

While it is conceded that the nature and condition of the street paving have much to do with the excessive tire destruction and wear, it has been proven by actual demonstrations, extending over periods of from a few months to two years, that overloading and inadequate tire sizes are even greater factors, as will be seen upon analyzing the appended table. These figures have been compiled by one of the prominent tire manufacturers, and they set forth the mileages obtained with different sized tires, the trucks in each case operating under precisely the same conditions as to load, pavement, driver, etc.

Altho the average mileage obtained from solid tires is 8,000, many cases are reported where this figure has reached 15,000; and where the truck owners take particular pains to

analyze the conditions under which their vehicles operate, and take steps to correct any abuses by the drivers, mileages as high as 30,000 have been obtained. For instance, The London Omnibus Co. reports that in many cases the tires on its vehicles show 30,000 miles of service. In these cases, however, the vehicles are probably those which operate in the heart of London where the pavement is of the best asphalt or wooden block. It should also be stated that particular attention is paid to the efficient operation of these vehicles; and the fact that they are adequately equipped with tires of proper sizes is probably the factor which plays the most important part in their long service.

A few specific instances will be cited to show the effect of increasing the tire sizes where the original sets have shown poor efficiency. In all cases it will be seen that where larger tires have been substituted the percentage of increase in the resulting mileage far exceeds the percentage of increase in the size of the tires as well as the increase in cost. This fact alone argues strongly in favor of using as large tires as the operating conditions will warrant.

One striking example of the results received from tires not large enough for the load, as reported by a prominent tire manufacturer, is furnished by two 1½-ton trucks operated by The Texas Co., one in Fort Worth and the other in Dallas. The rear wheels of these trucks were equipped with 3-inch dual tires, all of which failed in a little over 3,000 miles. When the manufacturer began studying the situation and had the trucks weighed, it was found that each wheel had been overloaded by 858 pounds. The old 3-inch tires were consequently replaced with 4-inch tires, which have given more than 10,000 miles and are still running. They have worn down evenly and smoothly and afford one of the best examples that could be desired to show the economy of using tires large enough to carry the load. Furthermore, these trucks always carry the same load, being built to accommodate a certain number of oil containers.

Another example is furnished by a three-ton truck operated by the National Refining Co. of Indianapolis. This truck was originally equipped with 36 x 5-inch single front tires and 36 x 4-inch dual rears. While using this equipment the company was changing the tires every two or three months until persuaded by the manufacturer to adopt larger sizes for the rear. This advice was accepted, as a result of which the new tires have been in service for more than a year without a single change.

An ice company was operating a three-ton truck equipped with 36 x 5 single fronts and 36 x 4 dual rears, and during the busy months of last summer this truck traveled about 200 miles a day, being compelled to change tires every two or three months. The rear tires were finally changed to 36 x 5 duals during March of the present year, since which time the truck has been running 24 hours a day, delivering 84 tons of ice. During the six months of use the tires show only slight tread wear and are still good for several months. The manager of this company reports that he is pleased with the service received from the larger tires and that their installation stopped the delays which were frequent last year.

The Jackson Brewing Co. of New Orleans operates, among other vehicles, a three-ton truck which was originally equipped with 4-inch tires front and 4-inch duals rear. Before one half

of the manufacturer's guaranteed mileage was realized the tires were worn out. They were then replaced with 5-inch tires both front and rear and these were in service considerably more than a year, giving the guaranteed mileage.

In one case where it was necessary to supply a new wheel to a 1½-ton truck which was equipped with 3½-inch tires, a wheel with a 3-inch tire was substituted and the mistake was not noticed by the purchaser until the new tire began to wear more rapidly than the others. At the end of about 4,000 miles the 3-inch tire had worn down to the steel base, while the others were still in good condition. This is probably one of the best examples of the results of inadequate tire equipment that could be supplied from actual experience.

In still another case where it was found advisable to enlarge the size of the tires, the increase in mileage, compared with the increase in the tire size, was about in the ratio of 3 to 1. The original 36 x 4 rear tires showed a mileage of 4,513. When

these were increased to 36 x 5, the mileage reached above 7,600, showing a 25 per cent. increase in size of tire with nearly 70 per cent. increase in the mileage.

The following table shows the results in a number of instances where a slight increase in the size of the tire equipment has shown a much greater increase in the mileage obtained. These figures were only recently completed by a well-known tire manufacturer, the observations extending over a period of from three or four months to about two years. In each case the rear tires were of the dual tread type. It will be noticed in this summary, as in all cases mentioned above, that a slight increase in the size of the tires means an enormous increase in the service. From the averages of these figures it will be seen that the increase in service compared with the enlargement in equipment, is in the ratio of almost 4 to 1. It is self-evident, therefore, that the additional service received more than offsets the increased cost of the larger equipment.

TRUCK OPERATOR	TIRE EQUIPMENT.				MILEAGE.			
	Original.		Present.		Original.		Present.	
	Front.	Rear.	Front.	Rear.	Front.	Rear.	Front.	Rear.
Isley Heli Co., New York City.....	34x4	36x4	34x5	36x5	5,500	3,800	8,000	8,000
A. Linkenberg, New York City.....	34x3½	34x3½	34x4	34x4	2,500	2,500	8,500	9,000
H. C. & A. I. Piercy, New York City.....	....	36x4	....	36x5	....	11 mos.	....	20 mos.
J. T. Castle Ice Cream Co., Irvington, N. Y.....	36x4	36x4	36x5	36x5	5,000	5,000	8,000	11,000
J. T. Castle Ice Cream Co., Irvington, N. Y.....	36x4	40x4	36x6	40x5	5,000	4,600	11,500	11,500
Newark Rivet Works, Newark, N. J.....	34x4	36x4	34x5	36x5	5,500	4,500	8,000	10,000
Patton Paint Co., Newark, N. J.....	34x4	36x4	34x5	36x5	5,500	4,500	8,000	10,000
C. Treitz, Brower, Newark, N. J.....	34x4	36x4	34x5	36x5	6,000	5,000	8,000	9,000
J. W. Greene, Jersey City, N. J.....	36x5	40x4	36x5	42x5	8,000	4,000	8,000	9,500
Wilkinson, Goddes & Co., Newark, N. J.....	36x5	40x4	36x5	42x5	8,000	4,000	8,000	8,500
Wilkinson, Goddes & Co., Newark, N. J.....	34x4	36x4	34x5	36x5	5,500	5,000	11,000	11,000
Swift & Co., New Brunswick, N. J.....	34x4	36x4	34x5	36x5	5,000	4,000	8,800	9,000
H. Muhs Co., Paterson, N. J.....	....	40x4	....	42x5	....	4,000	....	9,000
Chelsea Storage Warehouses.....	34x4	36x4	34x5	36x5	4,000	4,500	8,000	8,000
Jere Skidmore & Sons, New York City.....	....	42x6	....	42x7	....	3,500	....	8,000
Average Percentage Increase in Tire Widths and Mileage.....	....	....	22	24	....	....	58	123

AMAZON RUBBER SHIPMENTS FOR 1912 AND 1913.

MR. PICKERELL, the United States consul at Pará has sent the state department some statistics compiled by one of the large exporting companies of Brazil which show that during the crop year 1912-13 there were shipped from the Amazon Valley 94,525,065 pounds of rubber, or some 4,500,000 pounds more than in the preceding season. Summarized, the exports for 1912-13 by ports of shipment and the total exports for each of the four preceding crop years were as follows:

Ports.	Fine.	Medium.	Coarse.	Caucho.	Total.
From Pará					
United States...	9,310,415	1,787,730	10,072,695	4,603,095	25,773,935
Europe	15,037,190	1,587,175	3,034,775	5,883,870	25,543,010
From Manaus					
United States...	9,311,475	1,695,455	2,896,035	2,601,475	16,504,440
Europe	10,174,855	1,863,315	2,451,505	6,349,620	20,839,295
From Belém					
United States...	57,695	4,920	31,415	78,445	172,475
Europe	1,794,510	167,250	661,185	2,571,745	5,194,690
From Itacoatiara					
United States...	9,260	330	6,615	5,620	21,825
Europe	232,505	28,165	153,785	60,940	475,395
Total					
United States...	18,688,845	3,488,435	13,006,760	7,288,635	42,472,675
Europe	27,239,060	3,645,905	6,301,250	14,866,175	52,052,390
1912-13	45,927,905	7,134,340	19,308,010	22,154,810	94,525,065
1911-12	45,931,105	7,839,635	19,808,530	16,378,140	89,957,410
1910-11	37,873,210	6,318,450	15,095,050	14,640,895	73,927,605
1909-10	43,783,800	7,720,585	19,006,050	15,668,250	86,178,685
1908-09	40,428,365	6,750,555	19,336,740	17,797,915	84,313,575

The consul reports: "It is the opinion of merchants who

should know that, by reason of the low prices at present prevailing for rubber, many latex gatherers are leaving the woods, and that few new workers are being found to take their places. Unfortunately, there are no statistics available to support this statement; but it is not improbable that there is some truth in the rumor. What effect it will have on the coming crop it is impossible to say at this writing (July 24, 1913); but this labor shortage and the fact that it is becoming increasingly difficult to find capitalists willing to finance advances, forces one to the conclusion that the 1913-14 harvest will be smaller than the 1912-13 crop."

TROPICAL GOODYEAR AGENCY.

In addition to its Canadian and European representation, the Goodyear Tire & Rubber Co. is represented and its tires distributed by agents at each of the following centers: Cuba, Porto Rico, the Philippine and Hawaiian Islands, Brazil, Uruguay, Barbadoes, Trinidad, Jamaica, the Republic of Panama and at Ancon in the canal zone.

AUTO HORN BULB WITH RUBBER TOP.

An English company is manufacturing an automobile horn bulb which in reality is a metal funnel with a curved rubber cap fastened on tightly over the top. A tap against the cap blows the horn, and when the cap, by reason of much use, becomes worn out, it can be removed very easily and another put on in its place.

Para Rubber in Mexico.

By J. C. Harvey.

In spite of civil war and revolutions, Mr. Harvey keeps his Mexican plantations going. He stands his ground, equally prepared to entertain friends, fight or pen scholarly essays. The following letter from him is of great interest, not alone to the student, but to the many who are interested in Mexican plantations. That the *Hevea* could be grown in southern Mexico as well as anywhere in the world, many have believed. Mr. Harvey's facts and figures prove that belief to be fully justified. The samples of rubber submitted were equal to the best plantation product of the Middle East.

HAVING in mind a request made by you long since for notes on the progress made by the trees of *Hevea brasiliensis* (Para rubber) planted by the writer, the facts are as follows:

The first seeds—some 20 in number—were transmitted to me by Dr. Henry S. Ridley, late director of the Botanic Gardens at Singapore. Fourteen of these germinated and were planted in permanent position in due season. These trees you saw when visiting Mexico some nine years ago. I regret to say that they were destroyed subsequently by deer, during a protracted absence of the writer. Indeed at that time we did not know that deer were fond of feeding on the bark of *Hevea* trees.

About three years after the loss of the first trees a further remission of seeds was made, and their product—the present

referred to at greater length. The phenomenon of foliar periodicity, both terminal and lateral, is as well marked here in Mexico as in the Orient, occurring at various intervals throughout the year, complete defoliation rarely lasting more than a fortnight, often much less and in some instances new growth occurring synchronously with the fall of the older foliage. In this district—South Eastern Mexico—the partially deciduous period may be said to occur during April and May, the driest months of the year, the deciduous character being more marked as the trees attain age.

The aspect of poorly developed heads, yellowing of foliage—indicating a want of chlorophyll and caused no doubt by defective root nutrition—atrophy of lateral branches and die-back of tops, as seen in some localities here in Mexico and elsewhere as so commonly affecting *Castilloa*, is entirely



Hevea PLANTINGS AT EL PALMER ESTATES.

trees, now six years in position, forms in part the subject of these notes. These *Hevea* trees have grown vigorously and are in the best of health. The accompanying photographs will convey some idea of them, and of others herein

absent in *Hevea*, the following is a brief summary. Briefly then, insofar as plantings, either upon a practical or experimental scale, have been made, the trees leave nothing to be desired in their general aspect of growth and health.

fullness, tho upon the whole it is doubtful if the growth is quite so rapid as in equatorial regions during a well marked dry season; and upon this point it may not be doubted that there are compensations, as during a fairly well marked dry



Hevea Tree in Garden at El Palmer

season many forms of mycelium and various bacterial germs are destroyed or reduced to a minimum, while bark formation is relatively solidified and wounds heal with less liability to rot, thus reducing the risk of insect or other attack upon the cortex.

Tapping was commenced upon the few trees of sufficient size—varying in circumferential measurement from 19 to 26 inches at 2½ feet above ground—the early part of April of this current year, and I am sending you samples of the rubber I believe the first *Hevea* rubber produced in Mexico.

Single half spiral excisions embracing one-half of the circumference of the trees have been worked, daily parings from the lower wall of the excisions having been made, on the basis of thirty parings to the inch of bark removed. It must be admitted that this degree of expertness was not attained until some little practice was had. The now well-known phenomenon of wound response, commencing with an inappreciable quantity of thick latex for the first three or four parings and followed by thinner free running latex, was just as well marked and apparently as certain as elsewhere. The yield of dry rubber samples, made daily and taken from trees of dimensions already referred to, varied from eight to twelve grammes from the single half spiral. This plan is being changed to three oblique excisions on the half herring bone system, the cuts ten inches apart—the object of the writer being to try the various systems not altogether condemned by the most advanced authorities on the subject.

Up to now no vegetable disease has been observed as affecting *Hevea*. Leaf cutting ants will eat the foliage, but their nests are easily destroyed with one or two applications of bi-sulphide of carbon, this pest having been dealt with previously in plantings of cacao by the aid of the same remedy and with complete effectiveness.

We have, however, one animal pest that cannot be blinked at, and an initial capital charge should be considered as inevitable in any contemplated laying down of *Hevea* in Spanish America—at least as far south as the Isthmus of Panama, to which point the writer has observed its existence. I refer to the pocket gopher, or, as known here, the "Tusa" or "Taltusa," a rat-like rodent which burrows in the ground and eats with avidity the roots of *Hevea*, cacao and other plants, especially those containing starch, such as the banana. This pest, however, may be disposed of effectively by trapping, digging out, or poisoning; and the best time for its almost entire destruction is immediately after the felled first growth has been burned, while the surface is as clean as may be and all evidences of burrowings visible. Such mounds or burrowings should be marked with stakes and the pests exterminated, no pains being spared to accomplish this; after which, with a little care, any further inroads from adjacent wild land can be dealt with. This pest is well known in the orange groves of California and Florida and the pecan nut orchards of the southern United States. In some districts of tropical Mexico and south it is almost unknown; in other localities, more or less common. It is a good plan to have a clean strip some twenty feet in width constantly maintained so that any incursions from adjoining wild or infected lands can be at once detected, or before any damage be done, and thus the plantings may be kept free.

To what extent tropical Mexico or other district in nearby Central America may yet figure in the production of Pará rubber is difficult to say, but there can be no doubt in the opinion of the writer that considerable areas in these countries are but awaiting selection and the use of sufficient capital to transform them to profitable undertakings. Undoubtedly much care in the selection of land, available labor supply,



Hevea Tree at Buena Ventura

etc., will be necessary. It is evident, however, that the tree is far less capricious or exigent in its soil requirements than *Castilloa*, given the requisite temperatures and rainfall. And at this point it is opportune to give a condensed table of

meteorological records as made at El Palmar Estates during the past three years:

	Inches	Ave. Mini. Temp	Ave. Max. Temp
January	4	60 deg. F.	81 deg. F.
February	3	60 deg. F.	82 deg. F.
March	4	65 deg. F.	87 deg. F.
April	3	70 deg. F.	92 deg. F.
May	5	75 deg. F.	95 deg. F.
June	15	72 deg. F.	92 deg. F.
July	22	70 deg. F.	90 deg. F.
August	20	75 deg. F.	92 deg. F.
September	22	72 deg. F.	88 deg. F.
October	18	68 deg. F.	85 deg. F.
November	5	65 deg. F.	83 deg. F.
December	3	62 deg. F.	80 deg. F.

Rainfall . . . 124 inches.

Both higher and lower temperatures have been recorded during the period under consideration—but the extremes were but a degree or so—nor are the annual variations of rainfall very great, not exceeding fifteen inches.

At Buena Ventura the rainfall over a period of 14 years shows an average of some twenty inches less, the variation annually ranging from 90 to 115 inches, tho the average atmospheric humidity throughout the year is greater, with a lesser rainfall, owing to less marked dry periods and a higher average of cloudy days, caused by proximity to oceanic effects. This data may be said to fairly characterize the best of the rain forest districts of Spanish America north of the Isthmus of Panama fronting the Atlantic or Caribbean sea.

Our few trees at Buena Ventura are growing in a dark



HEVEA TREE AT BUENA VENTURA.

loam soil underlaid with a light yellow somewhat porous clay. At San Selerrio, in very dark clay loam underlaid at varying depths with a very light colored stratified clay, and in some instances with a rotten shale-like formation into which many tree roots penetrate and upon which several *Hevea* trees

some seven or eight years of age are in a most flourishing condition and are being tapped with most gratifying results, several thousand one year plants are also in a healthy state.

At El Palmar the soil is the regular Cordoba coffee soil, a chocolate colored granular soil underlaid by a bright red porous clay. Here some 50,000 one, two and approaching three-year trees are also in a fine healthy state;—one feels inclined to say, hard to beat anywhere. Some years since I visited the Batavia Estates, situated in the State of Oaxaca in the Tuxtepec district, and I saw there a few very fine trees of *Hevea*, then some six or seven years of age; and at La Junta Estates some *Hevea* trees were growing vigorously when last seen by me some years ago. In short, I have no knowledge of any *Hevea* planted within the tropical rain forest districts of south-eastern Mexico that has failed to flourish, tho I believe that in several instances where a few trees have been planted and neglected they have disappeared in time, undoubtedly owing to the attacks of gophers or deer.

A NEW CASTILLOA TAPPING KNIFE.

ONE of the objections to methods that have been used in the past for tapping the *Castilloa* is that the trees were often left in such condition that they were either permanently injured and died, or required a long time in which to fully recover and heal over the wound left by the tapping process. Plantation men have been striving for a number of years to produce an instrument that would successfully tap trees and

still leave them in a healthy condition. The secretaries of the Obispo Plantation, Walter E. Holloway and D. H. Gardner, have designed a new knife which, it is said, will allow the incision to be made in such a manner as to permit perfect flow and the most rapid healing of the wound.



Instead of cutting out a piece or strip of the bark in the usual way, the

bark is merely raised from the tree sufficiently to permit the escape of the latex, after which it can be closed down to its original position and allowed to grow fast. Instead of the large ridge which results from the healing process following the usual method, there is very little scar left by the new process after the parts are united. This is a great advantage, since it permits a continuous tapping of the tree immediately above or below, or even directly on top of the previous cut. In other methods the scars are often so large that they prevent an unobstructed flow of the latex if the tree be tapped near the old wound. In time the tree becomes so covered with these old wounds that it is rendered valueless.

One excellent feature of this new knife is that it is provided with a movable gauge attached with thumb screws behind the cutting edge, so that the teeth can be quickly adjusted to the proper depth for a tree of any age. This prevents the knife from cutting too deeply through the bark, which contains the latex, and from severing the cambium. The equipment is light and is convenient to carry.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Rubber Importers as Planters.

IT was only a few years ago that the most sceptical of all the rubber men, as to any possible future for plantation rubber, were the rubber importers. They were far more positive and petulant in their scorn for all who planted than were the manu-



MR. I. HENRY HIRSCH, PLANTATION "SERRA"

facturers. Gradually, however, they changed; and it is probable that most of them today think that they always had faith in

rubber planting. And that is the comfortable way in which to view progress. There was one firm of importers, however, that believed enough to start its own plantation, and to administer it manfully. Plantation "Serra" in the State of Bahia, Brazil, is owned by the New York house, A. Hirsch & Co., well known as rubber importers. They have turned away from *Castilloa*, from *Hevea* and even *Ficus*, and gone in for *Manihot*, planting on a very large scale. One of the sons, Mr. I. Henry Hirsch, is in active charge of the plantation. The illustrations show the manager and a body of his field hands.

Incidentally it might be well to recall that American manufacturers have not in the past half appreciated the value of Ceará rubber. On the other hand there are scores of large European manufacturers—the Michelin's for example—who have been able to get better results in many lines of goods with Ceará rubber than with Pará even. It is therefore of the greatest interest to the trade that a firm like Hirsch & Co. has gone into such planting. It will undoubtedly aid not only in the production of more and better Ceará rubber, but in showing American manufacturers the true value of this excellent gum.

MR. WILLIS MISQUOTED.

In the *Boletim da Superintendencia da Borracha*, No. 1, published May 30, the statement is made that Mr. John C. Willis, the director of the Botanical Gardens in Rio Janeiro, had been experimenting with the *Manicoba* tree and that this rubber gave as good results as *Hevea*. This is a misquotation, as Mr. Willis says there is only one *Manicoba* in the botanical gardens and that this has never been tapped. The experiments that he has been making have been confined exclusively to the *Hevea* tree.



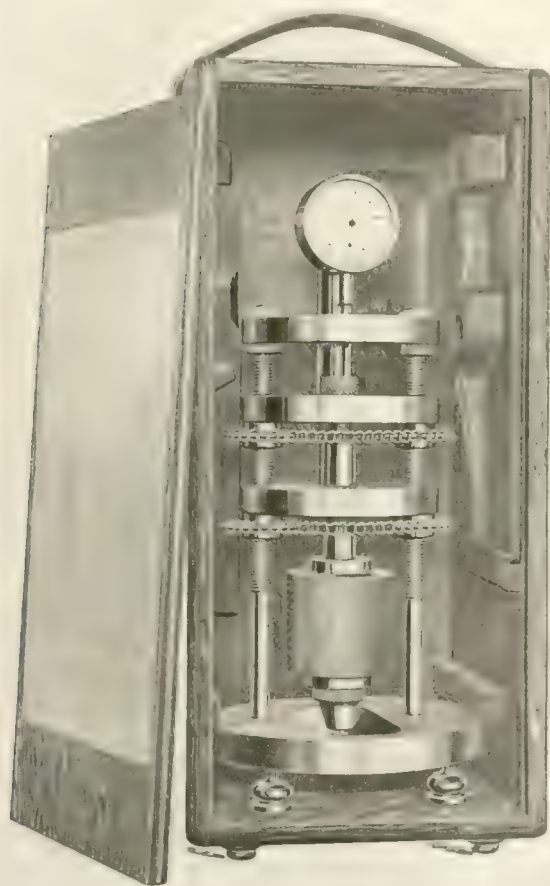
CEARA RUBBER GATHERERS ON PLANTATION "SERRA."

The Plastometer—A Rubber Testing Instrument.

By B. Denver Coppage.

THE instrument illustrated here, known as "The Plastometer," was exhibited by the inventor at the Rubber Conference. It was designed primarily to meet the needs of its manufacturers, The Pusey & Jones Co., manufacturers of paper making machinery.

The rubber covered rolls used in the "press part" of paper machines must be covered with "densities" that have been selected suitable to the paper to be made; and it is very important that the "density" be as ordered or the rolls will not be acceptable to the purchaser.



THE PLASTOMETER.

Since the adoption of this instrument, there is no uncertainty of knowledge as to the "density" of the covering of the roll, conforming to the "density" of samples selected.

The Plastometer, as its name implies, is an instrument by which the quality plasticity may be indicated. Its method is direct reading without injury to material tested; i. e., unlike a "tensile-test" in which the material is tested to its destruction. The Plastometer does not make a vicarious test. It is, therefore, to be classed with the most advanced ideas, as a means of determining rubber quality. Plasticity is so intimately related to the group—elasticity, softness and hardness, density, resiliency, etc.—as to indirectly indicate them.

The fundamentals of the Plastometer are the combination of parts whereby a weight may be supported wholly upon a sphere, said sphere being sufficiently hard to sustain such load without appreciable deformation, and means whereby the amount of penetration or indentation of said sphere into the material upon which it rests, at the expiration of one minute, can be determined. It will be evident that the dimensions of the sphere can be selected to suit the weight to be applied and the materials to be tested, or the mass of the weight varied, or both, and that the amount of penetration may be measured by an instrument integrated to various units of distance. For example, most grades of commercial rubber may be tested by the Plastometer in which the sphere is a hardened steel ball, $\frac{1}{4}$ inch diameter, upon which is placed a weight of one kilogram, the penetration or indentation of such ball being indicated by the micrometer dial gage, indicated to one 1/100 millimeters. The softer materials would require larger ball or less weight or both. The harder materials would require smaller ball or more weight or both. It is possible that certain very hard materials would require a longer application of the weight than one minute and it is possible that very soft materials would require a shorter application of the weight than one minute to obtain satisfactory indications. In each case, the principle remains the same, that of lowering without shock a weight upon a sphere which is free to penetrate material being tested upon which the sphere rests, and means whereby said penetration may be observed.

The Plastometer has been designed with a base particularly adapted to the testing of rubber covered rolls of more than 6 inches diameter. Our type "C" instrument has additional fixtures which adapt it to being mounted in a vice for testing small samples or pieces of rubber or other material. It is evident that the base could be altered to make it suitable for testing material in any form.

It seems possible that through the co-operation of some of the societies for testing materials, or a Bureau of Standards, that the Plastometer may be utilized to establish a standard scale of qualities for rubber. The inventor believes it is possible to utilize the Plastometer to determine raw rubber values, since it lends itself to the determination of "effect" resulting from "cause"; i. e., an increase of quality, due to treatment, or a decrease of quality, due to environment; such as deterioration of a rubber sample which is subjected to or acted upon by such causes as time, light, gases, acids or fatigue due to mechanical work, etc. These observances may be made for the reason that the test pieces are not affected by the Plastometer tests and can, therefore, be re-tested again and again after a lapse of time during which the sample has been subjected to some influence or treatment, the test being repeated hourly, daily or weekly, etc., as desired. To make tests of this sort, the inventor recommends that test pieces be prepared in a definite way and be contained in a metal ring of given dimensions, say five centimeters diameter and two centimeters thick, such samples being adopted for purposes of selection and standardization. It is obvious that samples of uniform dimensions are desirable.

The inventor believes that such samples should be kept and transported in air-tight, light, containers, such as are used for mailing bottles of liquids; i. e., the screwed-top, paraffined receptacle of suitable diameter and length for the number of

samples contained. Each sample should be dated and marked with Plastometer reading and such other designating remarks as the maker deems necessary directly upon the ring or upon a label attached thereto.

The Plastometer is being used by many leading rubber manufacturers in this country and by users of paper making machinery in this country and abroad. It could, undoubtedly, be made useful to manufacturers of soap, glue, etc. It can also, perhaps, be utilized to standardize raw rubbers so that the purchaser can have determined the values of his shipment without the delay which seems necessary under present methods used for such determinations.

The instrument is in its infancy, having thus far been developed by a buyer of rubber. Its further development for the benefit of the rubber trade will, undoubtedly, depend upon the engineers and chemists directly associated with the rubber trade.

THE SICO YIELD GAUGE.

NUMEROUS methods have been devised for measuring the hardness of metals and other comparatively hard substances, but until recently no way had been found to dependably measure the hardness or flexibility of such substances as rubber, leather or compositions of like nature. Testing rubber in its elastic state by merely feeling it and compressing it with the

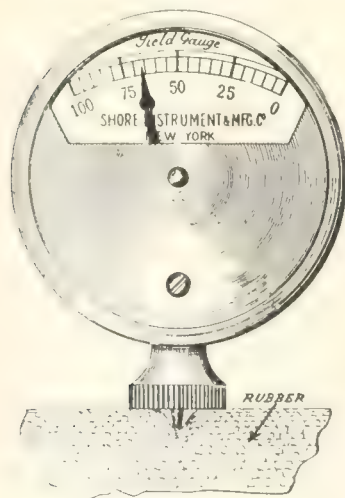
fingers is at the best very unsatisfactory even for experts, for it is difficult for one to determine what another has meant by hard, medium or soft.

In order to obviate these difficulties and to bring about a standard method of determining the exact state of elastic rubber, a company which makes a specialty of manufacturing gauges for particular purposes, has introduced an instrument known as the "Sico Yield Gauge," which is illustrated herewith. This gauge is intended to substitute the uncertain element of feeling, by merely press-

ing the sensitive blunt point against the material to be tested.

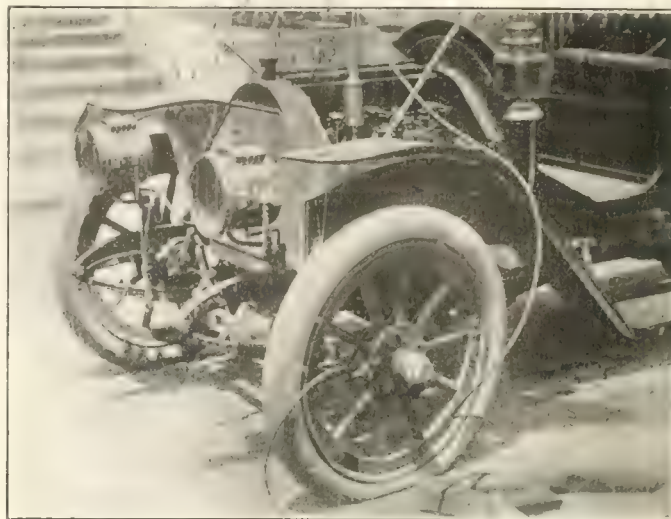
The indicating hand normally rests at 100, so that when very soft rubber is tested and a deflection of 5 degrees results, there is a resistance to yield of only 5 per cent., while the yield is 95 per cent. Therefore the 5 per cent. may be considered as the hardness of that sample. On the other hand, if a substance having practically no yield be tested, and the pointer swings over to zero, it indicates no yield or 100 per cent. hard. The gauge is pressed down until the knurled knob rests squarely upon the material to be tested, when the number indicated on the scale shows the percentage of yield or softness of the material.

It is said that the gauge is finding wide use in testing automobile tires. A good tire shows a yield of about 55 to 60 per cent while a poor one shows only from 35 to 40 per cent. This, however, does not imply that the softer the tire the better it is. There is a limit up or down and when once the standard has been determined, comparative tests are easily and quickly made by means of this gauge. [Made by the Shore Instrument & Mfg. Co., 555 West 22 street, New York.]



AUTOMATIC AUTOMOBILE-TIRE PUMP.

EVERY one who uses an automobile knows how unpleasant it is if an accident occurs in some place where there is no garage to pump up the tires. The pump shown in the accom-



panying picture is a useful invention. In order to add to the tire, the air pump is connected with one of the cylinders of the motor and the power is turned on. The pumping is done very quickly and of course much better than by hand. When the tire is filled, the air-pump is screwed off.

NEW WRINGING MACHINE.

A new wringing machine with a pneumatic roller has been brought out in Germany under the name of the "Clothes Saver." It wrings the clothes uniformly dry, even if not specially arranged on the rollers. Buttons, hooks and eyes are no longer crushed, and consequently the clothes are not injured. It only requires one person's attendance, the washing going direct from the tub to the wringer.

The pneumatic roller can be pumped up like a bicycle tire, and if the air gives out it can be pumped up again. When the wringing is finished there is no need to let out the air. On the other hand, it is necessary to loosen the lever fastenings, so that the pressure against the pneumatic roller may be relieved.

A NEW SIX-DIE INSULATING MACHINE.

The Watson Machine Co. of Paterson, New Jersey, has applied for a patent on a new seamless rubber covering machine for covering as many as six wires simultaneously. The dies are independent of each other, so that the flow of rubber can be stopped from any one die without interfering with the others. It has a special device in the head which supports the wires so that the insulation is of uniform thickness. The machine can also be used for manufacturing rubber tubing or tape. The steam and water supplies are so arranged that water is led from the jacket directly surrounding the worm, while steam is applied only to the head; over-heating is avoided, and danger to the rubber because of heating is eliminated.

Most tire users have no doubt met with situations where some instrument which would pick small pebbles or other foreign matter out of their tires would have been found a most useful and welcome addition to their tool kit. An instrument intended for this purpose and known as a "tyre pick," is supplied on request by The Victor Tyre Co., Limited, of London, England.

Two New Solid Tire Machines.

SOLID rubber tires were for a long time—and are now, in most instances—manufactured by means of the old method, in which the rubber is forced out through a die, or by means of the alternative method of building up the entire rubber

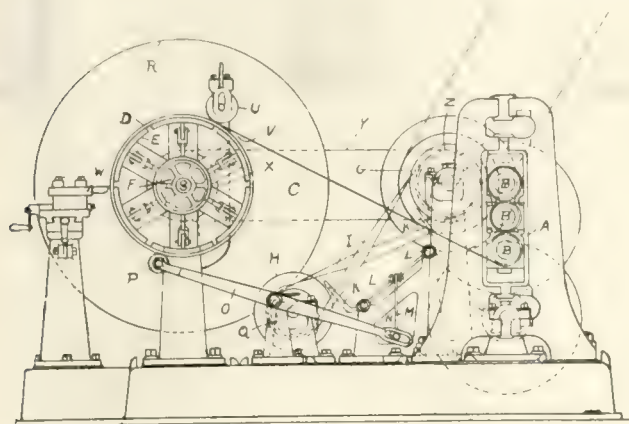


FIG. 1.—SIDE ELEVATION OF BRIDGE TIRE MACHINE.

portion of the tire by hand, in preparation for the mould. Two recent British patents, relating to a new method of building up solid rubber tires by means of specially constructed machinery, are briefly described herewith. The first of these, the invention of Robert and Jonathan Bridge, of the firm of David Bridge & Co., Limited, Castleton, England, relates to the building up of a tire in continuous layers of rubber taken from a calender which forms the rubber in sheets as it comes from the heating mill; of an adjustable mandrel upon which the metal base of the tire is placed, and of a cutting apparatus by means of which the tire is turned to the desired shape after wrapping.

The rubber is first passed from the heating mill to the calender A (Fig. 1), which is provided with three rollers B B. From this point the sheets of rubber may be cut into strips and conducted to more than one mandrel, altho only one is shown herewith.

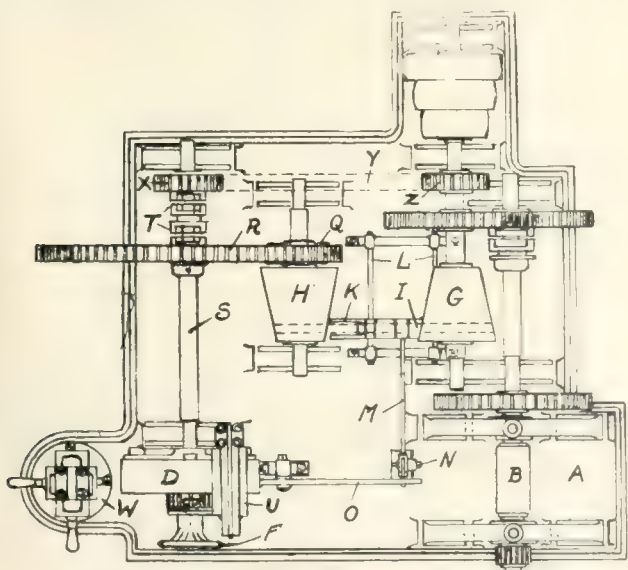


FIG. 2.—TOP VIEW OF BRIDGE TIRE MACHINE.

At C is shown the strip of rubber passing from the lower roller B to the mandrel D. This mandrel is usually of the split ring type, so that it may be collapsed for the purpose of removing

the rubber tread after the wrapping process is completed. It is held in place by means of an adjustable expanding ring E which is manipulated by the hand wheel F.

The speed regulating mechanism is the most interesting feature of this machine. It consists of two cone-shaped pulleys G and H (Fig. 2), connected by a belt I which is automatically moved over the pulleys as the tire increases in size. This is accomplished by means of a fork K carried on the rods L L and connected with a lever M pivoted to the frame at N. This lever engages with the slotted end of the lever O, the opposite end of which has a roller P which bears against the tire as it is being built up on the mandrel. As the tire increases in size during the winding process the series of levers causes the belt I to be moved across the cone-shaped pulleys so as to reduce the speed of the pulley H. This pulley, having a pinion Q which engages the large gear R, the speed of the tire periphery is kept constant throughout the

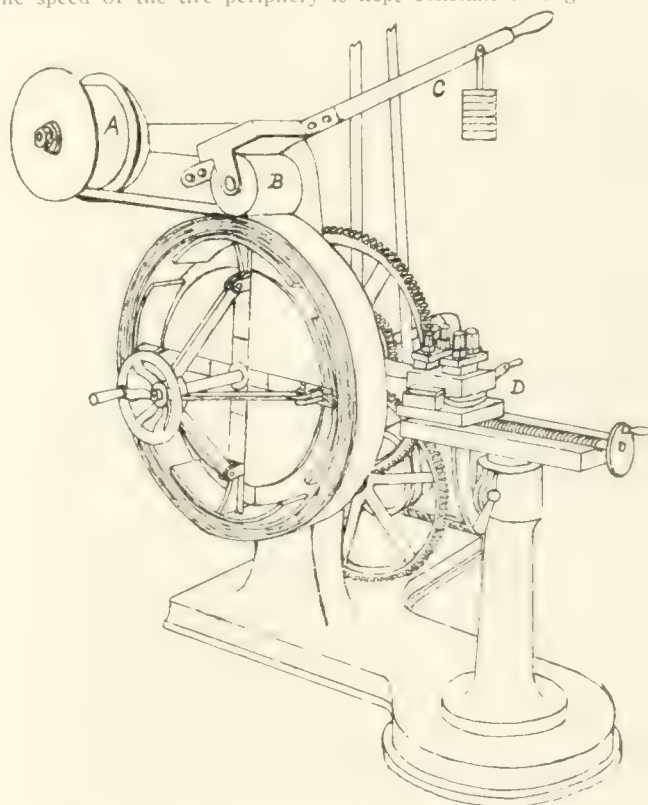


FIG. 3.—PRICE SOLID TIRE WRAPPING MACHINE.

winding process. The shaft S also has a clutch T by means of which the mandrel D may be thrown out of gear without stopping the calender.

The heavy roller U is employed to press the strips of rubber together so that all air is excluded from the tire. In addition to the roller a vacuum pump is sometimes used, with the open end of the air pipe placed in the angle V so as to withdraw the air away from the rubber strip as the latter is being wound.

After the winding is continued until the tire is of the desired thickness, the tread may be turned to the required shape by means of the cutting apparatus W. This cutter may be of the compound type so that the knife may be operated in any direction, and it may also include a buffing or finishing wheel to follow the cutter. The clutch T may be disengaged from the gear R and engaged with the gear X which is driven by a chain Y from the gear Z. This also gives a higher speed in the shaft S which is desirable for the cutting and finishing process.

The machine shown in Fig. 3, also made by David Bridge & Co., is constructed after the Price patent and is similar in principle to the machine described above. Instead of feeding the rubber to the mandrel from a calender it is fed from a roll A and is kept free from air by means of the roller B. It will be seen that this roller is pressed down onto the rubber by the weighted lever C, thus gaining a more solid mass entirely free from air pockets. The same or a similar cutting apparatus D is employed for shaping the tire to the required section to suit the mould.

SOME RUBBER PROBLEMS.

IN his paper lately read before the Liverpool section of the Society of Chemical Industry Mr. H. E. Potts dealt with various questions now engaging the attention of rubber manufacturers. He first gave some interesting particulars as to the latex of *Hevea Brasiliensis*. Investigations as to the nature of coagulation, he remarked, have not as yet reached a final stage, although this subject is of extreme importance in connection with the quality of the crude rubber to be produced.

He further treated in detail the difference between plantation and wild Pará rubbers, the latter seeming harder, more "nervy" after rolling and, in many cases, more consistent in quality. Among the causes to which this alleged superiority has been attributed is the premature tapping of plantation *Heveas* and the use of acetic acid as a coagulant in place of smoking as with wild Pará. Byrne has, however, taken out a patent for smoking plantation Pará.

With regard to testing rubber Mr. Potts urged that the present custom of purchasing large quantities of crude rubber from a small average sample was not an advisable method. He suggested the establishment of a warehouse for all the arrivals of plantation rubber, where experiments in vulcanization could be carried out, the results of which, together with samples, being accessible to the buyer. The manufacturer would thus be assured of receiving a product which, under like circumstances, would vulcanize in the same manner, and would be exempted from the necessity of making new vulcanization tests of each sample. In addition, it would be possible to ascertain the nature of the factors which affect the quality of the crude rubber and its vulcanization.

Another subject dealt with was the chemical composition of technically pure crude rubber. Under this head various laboratory methods were discussed for the removal of the protein. The constitution of rubber was then treated with reference to the investigations of Harries and other experts.

The problem of synthetic rubber was next discussed, Mr. Potts distinguishing between the polymerization of isoprene into rubber and the production of isoprene as the two stages in the process. He further expressed the opinion that it was possible to produce from isoprene a substance resembling natural rubber, and that homologues of rubber could be obtained in the same way. Oil of turpentine had been the original basic material, but only had a yield of 10 per cent. in the first experiments, which proportion has since been increased. Other substances had been tried, Bayer of Eberfeld using Kresol and the Perkin group fusel oil. The latter is now, however, dear. The best prospects of success, Mr. Potts considered, lie with the process for the production of isoprene homologues. He finally quoted the statement of Dr. Hoffmann, of Elberfeld, to the effect that a long time would elapse before synthetic rubber became an article of commerce.

Next in order came the problem of vulcanization, the speed of the process depending on the nature of the crude rubber employed and upon the method of vulcanization. If the co-efficient of vulcanization ascends, the hardness of the vulcanized article increases. Thus, it is added, the highest degree of vulcanization represents ebonite or hard rubber.

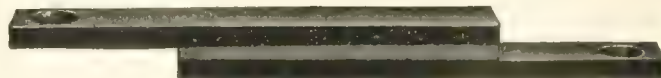
Reclaimed rubber is the last subject treated. In this connection Mr. Potts states that it has so far been found impossible to produce from waste rubber a substance equal to the crude article, and equally free from sulphur. According to Hinrichsen and others, a product containing a reduced proportion of bound sulphur is obtained by treating the waste rubber with zinc and with a mixture of benzine and alcoholic soda-lye. This contention has been criticized by Alexander.

In conclusion Mr. Potts remarked that it is easy to distinguish a good rubber article from an inferior one after several months' wear. What the industry wants to know before compounding and further treatment is whether a crude rubber is suited for the manufacture of a given article. For this purpose it is necessary to express differences in quality by chemical values.

A NEW STICKING PROCESS.

A GREAT many processes are known that have for their object the attaching of rubber to iron and steel. They are all more or less faulty and only occasionally successful. When, therefore, such an experienced and thoroughly practical rubber manufacturer as John J. Voorhees claims to have a new process by which a perfect adhesion between rubber and metal is attained, respectful attention is at once accorded. What the rubber trade has been vainly trying to do for the past forty years is at last accomplished, if Mr. Voorhees says so; and that is his statement. The Voorhees Co. calls the new process "Rub-Steel Combination," and is offering it to all who are interested. The illustrations accompanying show how thoroughly rubber and metal may be joined by this process.

The larger cut shows two flat pieces of steel, one-quarter of an inch thick, vulcanized together with a surface of rubber between



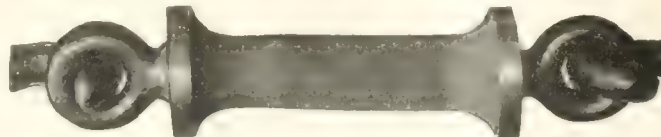
TWO PIECES OF STEEL WITH INTERVENING LAYER OF RUBBER.



THE TWO PIECES TORN APART, SHOWING THE RUBBER ADHERING TO THE STEEL.

them, one piece of steel projecting beyond the rubber in one direction and the other piece of steel projecting beyond the rubber in the other direction. The adhesion of the steel to the rubber in this combination was given a very severe test, one steel end being fastened in a vise while a large monkey wrench was applied to the other end, and it was necessary to exert a great deal of force before the two were torn apart.

In the other cut two steel discs are shown, vulcanized to a round bar of rubber. The discs are furnished with rings, in



TWO STEEL DISCS VULCANIZED TO ROUND PIECE OF RUBBER.

which hooks are fastened, and in this way the tension is applied. When the photograph was taken from which this cut was made the rubber had been stretched to two and a half times its normal length without any suggestion of parting from the steel. [The Voorhees Rubber Manufacturing Co., Jersey City, New Jersey.]

A RUBBER EXPOSITION IN CALIFORNIA.

EVERYONE who attended the Third International Rubber Exposition, held in the Grand Central Palace in New York, a year ago, will remember the wonderful exhibit made by Brazil. In area occupied, in completeness, in artistic arrangement, in general attractiveness, in the interest it created and in the crowds that visited it, it was altogether the most prominent feature of the



DR. EUGENIO DAHNE.

entire exposition. It was under the charge of Dr. Eugenio Dahne, who for many years was Commissioner General of Brazil—representing the Department of Agriculture, Industry and Commerce—to the United States and Canada. It was quite natural that the exhibit under his charge in the exposition should be altogether a successful one, as Dr. Dahne had had much previous experience in this line. He represented the Brazilian government at the World's Fair in 1893, and also at the later World's Fair held at St. Louis in 1904. He represented the government of the state of Sao Paulo at the Seattle Exposition in 1909, and two years later he was sent on a special mission by the Brazilian government to report on the expositions at London and Turin. So it is obvious that he was as well equipped as experience and extensive observation could make him for the successful management of the Brazilian exhibit in the New York Exposition held last year.

But Dr. Dahne now intends to make all this experience count for a still more important project than any he has yet engaged in. He is planning a comprehensive exhibition of all kinds of tropical products, but particularly rubber, to be given in connection with one of the international expositions to be held in California in 1915. In order to devote all his energy to this project he has left the position which he has held for so many years with the Brazilian government.

There will be two international expositions in California in the year 1915, to be held in honor of the opening of the Panama canal. One, the Panama-Pacific International Exposition, will be held in San Francisco for nine months, from the middle of February to the end of November, and the other, the Panama-California International Exposition, will be held in San Diego, beginning January 1, 1915, and continuing through the entire twelve months. Both of these expositions have been duly authorized by this government, and the initial work on both of them is being energetically pushed. Dr. Dahne has not yet decided with which exposition he will ally his exhibit, this decision depending upon which one offers the best advantages.

It is his intention to have this rubber show entirely different from any of its predecessors, for in addition to the indoor exhibit he expects to have a very interesting feature in the way of an outdoor exhibit, including the different rubber producing trees and plants—which it will be possible, owing to the mild climate of Southern California, to show in actual cultivation. He has outlined his general idea as follows:

"The general plan to be followed would be, to have the visitor enter first a large open court or *patio*, artistically arranged so as to represent, on one side a jungle scene, with rubber-gatherers at work tapping the trees, collecting the latex and smoking it; on the other side a rubber plantation, with coolies at work, showing how plantation rubber is cultivated and treated. The figures, of course, would have to be wax, but the trees and plants would be real ones, brought from the Orient, Central and South America, and kept growing in the soil, representing the different species that produce rubber. The *patio* would be surrounded by covered arcades where the different kinds of crude and plantation rubber are shown and the various systems of treatment and shipment are illustrated. Here too would be exhibited all the variety of tools and implements and the fertilizers used on plantations. Lecturers will be on hand to explain everything and to further illustrate by moving-pictures, what cannot be shown *in natura*.

"The visitor, having now learned how rubber is obtained, will then pass into the 'Rubber-Machinery-Hall,' where he will see all kinds of machinery—wherever possible, in operation—and learn how rubber is washed, dried and used in the manufacture of all kinds of goods. Here will also be the exhibits of auxiliary materials—on the one side chemicals, pigments, and compounding ingredients; on the other side cotton and other fabrics and reclaimed rubber.

"Finally, the visitor will reach the Manufactured Goods—or Sales Department, where he will see, arranged in groups, all kinds of manufactured articles showing the application of rubber in the automobile industry; electric lighting and transmission, etc.; surgery, dentistry and druggists' sundries; technology, science and art; roofing, flooring, paving; household and domestic articles; clothing industry, and toys, toilet and fancy articles."

In order to get a suitable building which shall be devoted to rubber and other tropical products, the exposition management requires that Dr. Dahne shall guarantee to occupy 100,000 square feet of space. He hopes to occupy a good deal more, because this is not a very large space considering that in addition to rubber, various food products of the tropics—coffee, tea, sugar, fruits, nuts, cereals, etc.—are to be duly exploited, leaving only part of the space for the rubber show; and out of this Brazil is expected to ask for a very sizable reservation. When one recalls that the New York Rubber Exposition occupied a floor space amounting to 160,000 square feet, it will be seen that Dr. Dahne's project is not over-ambitious. Of course, the amount of floor space, if applied for early enough, can be materially extended, but this tropical products and rubber section will be incorporated in the exposition if the rubber men and those interested in other products will give early assurance of occupying, between them, the 100,000 square feet.

Possibly the objection may be made that Southern California is in rather a remote corner of the United States and that it is a long journey from the Atlantic seaboard—which is true. But over against that remains the fact that Southern California is an all-the-year-around resort. Hundreds of thousands of easterners visit it in winter to escape the cold, and a vast army of people from the southwest interior visit it in summer to escape the heat; so that, even without the additional attraction of an exposition it has a continual crowd of visitors, and with this additional attraction the number of visitors would be largely increased. And such a section as Dr. Dahne has planned would undoubtedly prove one of the most interesting features of the general exhibition. Dr. Dahne is now visiting the principal rubber men of the East, with a view to getting them interested in this undertaking. With his wide acquaintance among the prominent rubber people of the United States, with his recognized position in the official circles of South America, with his long experience in exposition matters and his exceptional personal energy, this undertaking ought certainly to be most successful. If Dr. Dahne carries through his plan, there will be three

rubber expositions in quite rapid succession, tho in widely separated parts of the globe—first, the London Exposition, under the management of Mr. A. Staines Manders, who has organized the former London expositions and who also organized the one held in New York last year. This will open its doors on June 24 and continue to July 9. The second exposition will be held in Batavia from September 8 to October 10, 1914—with this California rubber exposition to follow in 1915. Dr. Dahne, it might be added, is now a resident of San Francisco, with an office at 1101 Merchants National Bank Building, in that city.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent

MR. B. G. WORK, president of the B. F. Goodrich Co., returned from Europe on September 17. Being interviewed in New York, he is reported to have said that the Goodrich factory in France, while not putting out a very large product, was in a very satisfactory situation. He states that the general automobile outlook in Europe is highly favorable, which argues for a good tire business; but competition among the tire makers is keen and the Goodrich company finds itself obliged to compete against many low-priced goods. He stated, according to his interviewer, that the company has at present no new financing in prospect nor any enlargement of the plant.

The recent reliability run, organized by the Washington "Post," from Washington through Maryland and Pennsylvania and return, was practically the first of its kind held in this country. It may be said that it emphatically demonstrated the suitability of the motor truck for country transportation, taking place as it did over ordinary roads, for much of the distance in comparatively poor condition. The purpose was two-fold, first to test the endurance of the various trucks and equipment, and second, to obtain data as to the economy of the motor truck in continuous day-after-day running on common highways.

Twenty-one cars took part, divided into seven classes, according to the load capacity of the various trucks. Every kind of vehicle was represented, from army ambulances completely equipped for the field to the huge eight-thousand pound Vulcan truck, the latter eventually proving itself the winner, notwithstanding its great weight, which severely handicapped it on the bad roads experienced the first day of the run. This truck was equipped with Goodrich demountable wireless tires and came through with an unblemished record so far as tire troubles were concerned.

The route presented every possible variation in material, state of repair and grades of roads, and was expressly chosen to give as great a variety and as strenuous a test as possible.

* * *

The book "What's What in Tires" has just been re-issued by the Firestone Tire & Rubber Co. This new edition is elaborately gotten up and is even more than ever complete in its information as to tire and rim building; and car owners will find it of great help and interest.

* * *

Few dinner pails were carried to the Firestone plant in South Akron Wednesday, the restaurant for employes having been opened on that day in the new building opposite the factory; and the restaurant helpers found themselves swamped when the noon whistle blew. Officials of the company made a tour of inspection Tuesday and pronounced everything ready for the formal opening. Undoubtedly it is the finest dining room of its kind in the city. The equipment is modern and complete, with a seating capacity of 250, and meals are to be served at cost. There has been a dining room in operation for office employes for some time, but until now no such provision had

been made for factory employes. The new restaurant is an addition which will be heartily welcomed by all.

The Goodyear Tire & Rubber Co. has introduced a new tire which is specially intended for use on electric vehicles. It has a special fabric lining, designed to combine reduced consumption of power and increased wearing qualities. A layer of light blue rubber is inserted just over the breaker strip, which acts as a guide to indicate when the tire needs retreading.

That its sales for the present fiscal year will reach the \$35,000,000 mark is the belief expressed by officials of this company, the 40 per cent. gain for the months of June and July over the business of the corresponding months a year ago contributing to this optimistic anticipation. This is about \$3,000,000 better than the expectations of the company in the early spring, which at that time were for a 25 per cent. increase over the business of 1912.

In the case of the Goodyear company against George Beabos, convicted of stealing fabric from the hose department of the company, a minimum fine of \$10 was imposed instead of the full penalty in convictions of this nature, leniency having been extended in view of the fact that his family of five children was soon to be increased by another birth.

* * *

Announcement has been made by the Diamond Rubber Co. that it will hereafter be able to meet even unusual demands for its tires, having increased its maximum daily capacity more than one-third.

* * *

Men have been sent from Akron to supply the vacancies caused by the discharge of a number of employes of the Mansfield Tire & Rubber Co., of Wooster, Ohio, after an absence which the company had refused to grant for the purpose of attending the county fair.

* * *

The National Cement and Rubber Co., Toledo, Ohio, are manufacturing a self-curing cement for tube repairing, which is known as "Tire-Sav." It is a rubber compound said to effect a more secure repair than the ordinary patch.

* * *

H. W. French, of Akron, and Fred Gove, of New York, formerly representatives of Ed Maurer, have incorporated a new company for selling and dealing in crude rubber, with offices at 82 Beaver street, New York, and Second National building, Akron, Ohio. The officers are H. W. French, president; F. S. Gove, vice-president and treasurer, and C. E. Sorrick, secretary.

* * *

The Knight Tire & Rubber Co., Canton, Ohio, has established a branch office at St. Louis, Missouri.

THE PROPER INFLATION OF TIRES.

Mr. Greenwald, of the service department of The Firestone Tire & Rubber Co., in a brief treatise on the proper inflation of tires, includes the following suggestions:

"Inflate slowly at first. There are a great many views as to the proper pressure, but it is ruleable to inflate the front tires to a pressure equivalent to seventeen or eighteen times their cross-section and the rear tires to a pressure equivalent to 20 times the cross-section; for example, 34 x 4 tires on front wheels should have from 68 to 72 pounds pressure, while on the rear wheels the pressure should be about 80 pounds. The tire should round out pretty well and not flatten under the weight of car and passengers. Reinflate the tire occasionally, as the inner tubes are permeable. It is not advisable to inflate the tires with the exhaust from engine. Oil and certain gases are destructive to the rubber."

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent

FALL business is unevenly distributed. While some lines in the rubber trade are lively, others lag to such an extent that complaints are numerous. Fire hose contracts are scarce, presumably because of the increased demands upon public treasuries. Manufacturers of belting note the tendency of large industrial concerns to allow manufacturers or dealers to carry stock rather than have reserve stocks in their store rooms. Rubber footwear trade is still quiet, but the clothing manufacturers report sales above the average, with the outlook bright for a steady and continued demand. Automobile tire makers are the busiest of all rubber goods manufacturers, the strike in Akron having led to a shortage, which has resulted in advantage to many tire manufacturers hereabouts. South Braintree seems to be a growing rubber manufacturing center, there being five concerns in that town now interested in one way or another in the industry. Besides the scrap rubber warehouse of the J. H. Stedman Co., mentioned elsewhere in this number, there are the Monatiquot Rubber Works Co., manufacturers of naturized rubber; the Mayflower Rubber Co., manufacturing rubber heels, soles and arch supports; the Boston Rubber Cement Co., and the Commercial Fibre Co.

I understand that William Killion & Sons Co., manufacturers of rubber shoe pads, are to have a new, perfectly appointed, up-to-date factory at Harrison Square, one of the conveniently situated outlying sections of Boston.

Some very valuable rubber was stolen last month, if reports in the daily papers are correct. They say that a man named Callahan, a freight clerk in the employ of the N. Y., N. H. & H. R. R., offered for sale at 30 cents a pound a quantity of crude rubber which he claimed to be worth \$2.25 a pound. Pretty nice rubber, that. It's a good many months since Boston dealers have seen any crude rubber worth \$2.25 a pound. But perhaps Callahan is an expert and knew good rubber when he saw it. The result of his entrance into the crude rubber industry was that not only was he arrested, but freight checkers named Malony and Noonan with him, on a charge of larceny of 274 pounds of crude rubber, valued at \$600, a portion of which was later recovered.

James H. Stedman, treasurer of the Monatiquot Rubber Works Co., was the host recently to about five hundred guests who gathered to celebrate with him the completion of the new barn on his country estate at New Sharon, Maine. The guests came from the neighboring farms and towns, and were entertained by a ball game, a flag raising and a dinner, which was featured by the presence of six huge pots of beans baked in the ground and done to an epicurean turn.

The Patterson Rubber Co., of Lowell, is turning out an average of sixty tires per day, with a demand which absorbs the total output. There is a steadily increasing call for the specialty of this concern, which speaks most favorably for the success of this comparatively new enterprise.

E. H. Hicks, of the Stoughton Rubber Co., returned the middle of last month from a successful trip which covered the large cities of the Middle West. He reports a generally optimistic feeling regarding the coming season's business, based on the condition of the crops and the prosperity of the farmers. E. F. McGowan and Fred C. Prince have recently returned from a vacation tour in Europe. They report that the best English styles in overcoats and raincoats which they have seen are those made in the United States. Of course, modesty prevents their

mentioning the name of the makers of these English style coats.

Things go humming right along at the factory of the Converse Rubber Shoe Co., at Edgeworth, Malden, Massachusetts. A full complement of hands is at work, and there are rubber shoe orders enough ahead to keep them busy until the arrival of the fall demand. The company's specialties in tennis lines have proven most popular, and orders are already coming in for early spring delivery. This company makes two special types of rubber heels, which have a good sale. In addition, the manufacture of tires—all carefully hand made—has been carried on in a conservative way; and these tires have been found so satisfactory and durable that this department is likely to be greatly enlarged the coming season. At the factory are shown tires which have stood severe tests, some of them having run over 4,500 miles. President Converse is giving his personal attention to the details of the business and is at the factory every day since the resumption of work after the shut-down of two weeks in mid-summer.

Years ago, welt shoes, whether hand sewed or made on Good-year machines, contained, between the outer and the inner soles, a filler, sometimes of leather, oftener of felt or tarred paper. This was necessary simply because there was space to fill; no wear came on it, and none was expected of it. When the welting machine was new and just beyond the experimental stage, a Brockton shoe manufacturer secured one, to try it out. In the factory were a large number of hand workmen, who foresaw, in the success of the machine, a loss of their jobs. While the machine was on trial, the manufacturer, wishing to keep his workmen, set them to bottom-filling the shoes soled on the welt-machine.

Meanwhile the foreman of the room was experimenting on a plastic bottom-filler, and had mixed up a lot of rubber cement with powdered cork, to be used in place of the leather or felt. This was to be placed in a "gob" in the space to be filled, and spread evenly over the insole, from welt to welt. Shoe makers truly believe that "there's nothing like leather," and they saw, in the event of success of the new filler, a further possibility of losing their jobs. But how to circumvent the foreman was a problem. The next day an advertisement appeared in the local paper, "Wanted, three plasterers, apply at—," the factory where the cement was being used; and sure enough, a plasterer, in white overalls, his kit of tools wrapped in a big cloth, applied for a job. The manufacturer was non-plussed, and started an investigation. It was not until he inquired at the bottoming room that he got any information. Answering his inquiry if anyone knew of the advertisement, a workman said: "Perhaps they want a plasterer to spread that new filler." The manufacturer peered into the barrel indicated, and inquired what it was. The foreman explained, and was ordered to "Chuck that stuff out of the window," the employer remarking that he wanted no cork stuff in his shoes—nothing but leather. The workmen gained their point, but the ingenious foreman persisted in his experiments (tho perhaps elsewhere) and as a result a compound of rubber cement and cork is now almost universally used as a filler in welt shoes, having been found noiseless (preventing the squeak) and waterproof, besides being sufficiently ductile to allow the inner sole to conform somewhat to the shape of the sole of the foot on which it is worn.

In carrying out the plans of the Chamber of Commerce Committee to investigate the extent of the manufacturing resources of Boston, thus becoming familiar with the various industrial plants in the metropolitan district, etc., a delegation of seventy members, in charge of Bernard J. Rothwell, made an initial visit, on September 18, to the plant of the Hood Rubber Co., at Watertown, where they were shown all its departments and workings. The committee expressed itself as well pleased with the visit and exceedingly interested in all the details.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE rubber trade throughout Rhode Island is in good condition, with encouraging prospects, the majority of the factories having orders enough on hand or in sight to necessitate operation on an overtime schedule. In fact, there is said to be a greater number of orders in the hands of the rubber companies at this time than for the past several years. Many of the plants are unable to secure all the experienced hands they desire, and the several are hiring help from Massachusetts, there is a steady and increasing demand for skilled operatives in all the local plants.

After a shut-down of four weeks for overhauling of plant and taking an account of stock, the Woonsocket Rubber Co. resumed operations on August 22, at the Alice mill at Woonsocket, and at the mill at Millville, when the calendar, cutting and making rooms at each plant began work. The following day every department in both mills was in full operation, with orders on hand for full capacity for several months and others in view. Nearly 2,000 operatives are affected by the resumption.

A new vulcanizing plant is being erected by this company as an addition to the Alice mill. It is to be four stories in height, 80 feet long and 60 feet in width, and will be of brick. The Eastern Construction Co. was recently awarded the contract, and work is to be pushed as rapidly as possible, about ten weeks being the time estimated for completion of the structure. It will occupy the site of the present carpenter shop, which is to be torn down, and will have a large basement of cement the entire size of the building. The cost of the addition will be about \$35,000.

Good progress is being made on the new buildings, additions and improvements that are being erected at the plant of the National India Rubber Co. at Bristol. Contractor William G. Murphy of Warren, has a large force of men employed on the foundations and walls for the temporary shop of one story, which is nearly completed. This building is to be 141 feet in length and 68 in width. The steel and lumber for the new structure to be erected in addition to the wire drawing plant are on hand and work will be started in a short time. This building is to be 218 feet long and 140 feet wide constituting a material increase to the company's plant.

There are two other buildings to be remodelled and another new building to be erected, in which the "slicing" department is to be located. It is expected that several months will pass before all the additions and improvements are completed. In the vulcanizing department the old vulcanizers are soon to be discarded for new ones, which will require only one-fifth of the time of the old ones to "cure" the rubber goods manufactured in the mill.

Much is expected of the new vulcanizers that are to be installed, as it is claimed that they will revolutionize the old-time methods introduced by Goodyear more than a half century ago. This vulcanizer has been adopted by the United States Rubber Co. and the first one is being set up at the National India Rubber Co.'s plant at Bristol. While there is much secrecy surrounding it, the claim is made that an hour and a half will be sufficient time in which to vulcanize rubber footwear, hose, wire insulation or any other of the products manufactured in the Bristol mill. This will be a great saving in time, for it takes from six to seven hours at present under the old system.

The method of curing by the use of this new machine is said to be altogether different from the old Goodyear process. While steam heat, or dry heat, generated from a steam plant, served its purpose for a long time, it is superseded, in the new vulcanizer. It is claimed that better results will be obtained in the handling of rubber goods with the new vulcanizer and

that the "life" will not be taken out of the goods so much as under the old heat system.

* * *

John T. Ashton, for many years an accountant in the office of the National India Rubber Co., and Miss Sarah E. Gladding, were married the past month in Bristol. After the marriage a wedding trip was taken through the White Mountains, following which Mr. and Mrs. Ashton have made their home in Bristol.

* * *

At the first meeting of creditors in the bankruptcy case of the Consumers' Rubber Co. of Bristol—held before the Referee in Bankruptcy, Nathan W. Littlefield, on August 28—claims were allowed and filed and a trustee chosen, Mr. Robert S. Emerson, a member of the committee appointed to investigate the affairs of the company in the interest of creditors, having been elected to this office, under \$5,000 bonds.

* * *

Among the individuals, firms and corporations in Providence on whom assessments of \$50,000 or over were levied, according to the report of the Board of Assessors filed early in September, are the following: Joseph Banigan estate, \$1,036,180—a decrease from 1912 of \$225,340; Joseph Banigan Rubber Co., \$161,000; Augustus O. Bourn, \$113,640; Bourn Rubber Co., \$147,000; Col. Samuel P. Colt, \$210,000; Davol Rubber Co., \$400,000; Charles Davol, \$57,160; Glendale Elastic Fabric Co., \$197,300; Mechanical Fabric Co., \$336,740; Rhode Island Hospital Trust Co., under the will of Joseph Davol, \$400,000; Revere Rubber Co., \$1,402,450.

The International Rubber Co. is assessed for \$130,680 and the O'Bannon Corporation for \$344,850, in the town of Barrington.

* * *

Clarence P. Bearce, chemist at the Washburne Wire Co., Phillipsdale, has returned from his summer vacation, which was spent at Oak Bluffs, Massachusetts.

* * *

A new steam engine of 350 horse power has just been installed at the plant of the International Rubber Co. at West Barrington, replacing one of smaller dimensions.

* * *

Mr. and Mrs. Walter S. Ballou returned on Monday, September 8, after an absence of several months abroad, most of which time was spent in England, motoring in Devonshire, Cornwall and the Midlands, later visiting London and Paris.

* * *

George Astill, general manager of the Glendale Elastic Fabric Co., has issued a statement denying the reports which have been current in this city and vicinity to the effect that the Providence plant of the concern was to be removed to Easthampton, Massachusetts. These rumors, it is claimed, have caused employees of the company to become dissatisfied and uneasy, and a number have left to find employment elsewhere. Mr. Astill states that the branch here is in a very healthy condition.

A TIRE FILLED WITH WET COMPRESSED CORK.

Compressed air is such a capricious entity that everybody would be glad to see it replaced, if it could be done, by something more controllable and just as resilient—but that something has not yet been found. A certain inventor, however, claims that he has succeeded—or if not quite—almost. He takes an inner tube such as is used in a pneumatic tire, and instead of filling it with air fills it with wet compressed cork, which, being extremely porous and full of air, has, according to his claim, more resiliency than solid rubber and almost as much as a pneumatic tire, while not being subject to the inconveniences that inevitably follow when a pneumatic is punctured—because a puncture in his cork-filled tire inflicts no great injury, the air still staying in the cork. If this wet compressed cork substitute works, it will be eagerly welcomed; but the inventor will first have to prove his case.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

WILLIAM NEWEITH, superintendent of the factory of the Gorham-Revere Rubber Co., was drowned in the Russian River a short time ago, as the result of an accident in which he was thrown from a motor boat, struck by the propeller, and so rendered unable to save himself. Mr. Neweith had been with W. J. Gorham since his boyhood and was recognized as one of the brightest men in the business on this coast. He was held in high respect and esteem by his many friends, and his death came as a shock to all. He was thirty-two years of age, unmarried, and leaves a father, mother and sister.

* * *

The machinery of the Acme Rubber Co. has been purchased by Mat. Byrne, for the factory of the Goodyear Rubber Co., in this city. The Acme company was established a short time ago for the purpose of manufacturing articles of trade from a new substitute for rubber which it controlled.

* * *

Mr. C. C. Case, vice-president of the Revere Rubber Co., is now on the coast, looking over the company's affairs here. Certain plans are being perfected whereby the wholesale stock of the United States Tire Co. will be brought down to the Gorham-Revere headquarters on Fremont street; and other changes are under consideration which will be decided upon and given out later in the month.

* * *

The United States Tire Co. is laying in a big supply of non-skid tires for the coming season. The supervisors of San Francisco are trying out a plan on their asphalt streets intended to prevent slipping during wet weather. About an inch of the asphalt is scraped off, heated over again, and mixed thoroughly with a coarse-grained sea beach sand, which seems to give a very satisfactory, non-slipping surface.

J. S. Wiese, manager of the Los Angeles branch of this company was a recent visitor in San Francisco. Ed. Fleming, formerly of the San Francisco branch, has been transferred to Seattle, to succeed R. E. Dougherty as office manager there.

* * *

The Ralphs-Pugh Co. expects to move into its new quarters at 562 Howard street by the first of October. Here it will have a two-story reinforced concrete building, and every facility for handling its increased business. A stock of footwear has been received and business is reported as moving along satisfactorily.

The Western Belting & Hose Co., at 518 Mission street, has secured the contract for supplying the fire equipment for the big fair which is to be held at San Diego, California. These fixtures are novel, being finished in gun metal. This same firm is also supplying the fire equipment for practically every building which will stand in the world's fair grounds at the Panama Exposition, to be held in San Francisco in 1915.

C. W. Martin, Jr., manager of the motor truck tire department of the Goodyear Tire & Rubber Co., reports that his department is kept constantly busy and he looks forward to a big year.

The American Rubber Manufacturing Co., of 408 Mission street, is now installing additional machinery, new calenders and mills, at its factory at Emeryville.

Rice & Davis, who have been conducting a tire establishment at Petaluma, California, have filed a voluntary petition in bankruptcy.

The Burton-Rounsaville Tire Co., of Los Angeles, has dissolved partnership, R. W. Burton giving a bill of sale of his interest to L. S. Rounsaville.

The Western Tire Co. has recently been incorporated at Oakland, California.

THE NEW HOME OF THE RUBBER CLUB OF AMERICA.

THE new home of the Rubber Club of America is in the Hess Building, 354 Fourth avenue, New York, a photograph of which is reproduced herewith, the arrow pointing to its offices on the sixteenth floor. It will be noted that they are situated



on the corner of the building, from which a magnificent view of the city and East River to the north and east is obtained.

This new building is a twenty-story structure on the southwest corner of Fourth avenue and Twenty-sixth street, and is one of the largest as well as handsomest of the buildings in the new uptown business district, of which Fourth avenue is the main artery.

The Rubber Club offices are in charge of the secretary, H. S. Vorhis, and ample facilities are available for carrying out the work that is being outlined by the Executive Committee.

THE 1913 YEAR BOOK OF THE RUBBER CLUB.

THE Year Book of The Rubber Club of America for the present year has just been issued by Secretary Vorhis. It is by far the most pretentious piece of literature that the club has yet put out.

It contains about three times as much matter as has hitherto appeared in the modest little annuals of the club, which have been content to give the constitution and by-laws, the board of directors, members of the various committees and the list of the club's membership. This new book—which is 4 x 9½ inches in size and contains 48 pages—in addition to the matter hitherto published in the club's annual book, contains the proceedings of the last annual meeting, held April 21, 1913, the address of President Frederick C. Hood at the annual banquet last January, and a membership list divided under the new classification of firm, active and associate.

The firm members are entered first under an alphabetical arrangement of the names of the firms, and then under an alphabetical arrangement of the names of the representatives of the firms. This list is followed by the roll of active members and that by the list of associate members. At the time of compilation of the membership lists—in July last—there were 60 firm, 208 active, 64 associate and 4 honorary, making a total of 336 members.

The book contains two interesting photographic illustrations,

one of the last annual banquet at the Waldorf and the other of the midsummer outing in July, 1912. The pages devoted to the necrology of the club show that 6 members have died since the compilation of the previous book, viz.: Frank D. Balderston, of The United States Rubber Co., and for some years secretary of the club; S. Lewis Gillette, of The American Rubber Co.; Edward R. Rice, of The United States Rubber Co.; Daniel S. Pratt, of The Foster Rubber Co.; Edward Beecher Kelley, of The Mechanical Fabric Co., and Frederick M. Shepard, of The Good-year Rubber Co.

Every member of the club will find this new Year Book full of interesting and valuable information.

SOME INTERESTING CORRESPONDENCE ON RUBBER STEALING.

THE correspondence reproduced below, between The Davidson Rubber Co. and Mr. H. S. Vorhis, secretary of the Rubber Club of America—acting for the "Committee on Rubber Stealings"—shows the alertness with which one company is prosecuting these offenders. If other manufacturers would use equal vigilance and all work together for the common good, rubber stealing would soon become a very uncomfortable occupation and be abandoned. It might be added that one of the most active workers in this cause is a very large concern dealing in scrap rubber, and one of the firm members of the Rubber Club.

Boston, September 12, 1913.

RUBBER CLUB OF AMERICA.

Attention Mr. H. S. Vorhis, Secy.,

354 Fourth avenue, New York City.

Dear Sir:

In accordance with your letter of July 23, 1913, to our president, Mr. A. M. Paul, it might be of interest to members in this vicinity to note that night press-man in our employ, Martin Kenney, alias Thomas Kennedy, left his post at 2 a. m. this morning, took 60 pounds of raw rubber with the probable intention of taking it to his room near by; was arrested by police on the local beat. In court he was found guilty and fined \$50, and in default of payment he was committed to jail.

We shall investigate this matter further as we desire to discover where this rubber was to be disposed of.

Yours truly,

DAVIDSON RUBBER COMPANY.

W. D. Yates, Superintendent.

Boston, September 20, 1913.

H. S. VORHIS, Secy.,

Rubber Club of America,

New York City.

Dear Sir:

Answering your favor of September 17 regarding Crude Rubber Theft: I have interviewed the man now serving three months sentence because of inability to pay his fine of \$50. I failed to secure any further information.

This particular lot of rubber was found intact and returned to us before he had any chance to dispose of it. In truth, I consider our action was so prompt and decisive that it will tend to prevent any further stealing from our plant.

However, I have had some further intimation that goods could be secured from other plants, but have not been able to secure any definite proof.

Very truly yours,

DAVIDSON RUBBER COMPANY.

W. D. Yates, Superintendent.

Boston, September 23, 1913.

H. S. VORHIS, Secy.,

Rubber Club of America,

354 Fourth avenue, New York City.

Dear Sir:

For your information we are enclosing copy of letter which we have just sent to all consumers of crude rubber in this vicinity.

Yours very truly,

DAVIDSON RUBBER COMPANY.

W. D. Yates, Superintendent.

(Copy of the Davidson Circular.)

GENTLEMEN:

Will you kindly advise us if John J. Collins is in your employ. He is an experienced rubber pressman, subject to periodical drinking sprees and has been concerned in a theft of rubber. A warrant for his arrest is in the hands of the local police. We can describe him as being smooth face, medium complexion, 35 years old, weighs about 135 pounds, and has a slight Irish accent.

If you have any information regarding him, please advise us at once.

We will appreciate your co-operation in this matter as we believe his arrest will probably break up a gang that has been stealing rubber for a considerable period. One of the gang—Martin Kenny (alias Thomas Kennedy), is now serving a three months' sentence.

Yours truly,

(Signed) DAVIDSON RUBBER CO.

A RESOLUTION REGARDING RUBBER THEFTS.

The following resolution was passed by the Executive Committee of the Rubber Club of America at its regular quarterly meeting held in New York on September 23, 1913:

WHEREAS, Complaint has been made that certain dealers in rubber waste are in the habit of purchasing crude rubber from parties who are neither importers nor brokers, which transactions are undoubtedly of a questionable nature, it is, therefore,

RESOLVED, That the Executive Committee of the Rubber Club of America take the following preliminary action:

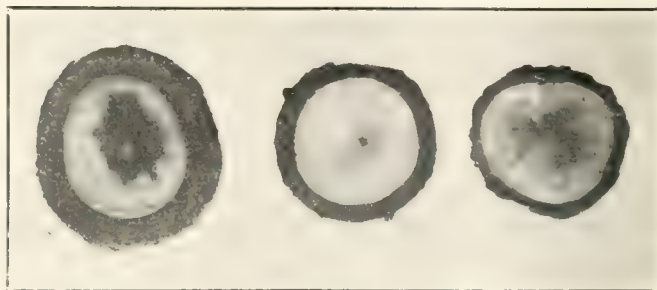
That each dealer in waste rubber be informed of the habit of some rubber waste dealers;

That all be invited to coöperate with the Rubber Club of America in stamping out rubber stealing;

That all agree not to deal in crude rubber and to advise the secretary of the Rubber Club of America, 354 Fourth avenue, New York, for the Rubber Stealings Committee, of any suspicious lots of rubber that come under their observation.

PROFESSOR LLOYD CORRECTS A COMPOSITOR.

In the August issue of THE INDIA RUBBER WORLD there was a very interesting paper by Professor Francis E. Lloyd of McGill University, Montreal, on the Acclimatization and Cultivation of the Guayule. In illustrating the statement that structural differences in the relative thickness of the cortex or "bark" were attributable to the amount of available water, he used a half-tone cut showing cross sections of guayule grown under three different conditions of dryness. By an error—perhaps pardonable under the circumstances—the compositor inserted the cut upside down, so that the descriptions that came under the two



THIN BARK OF GUAYULE FROM CHIHUAHUA. THICK BARK OF GUAYULE FROM ZACATECAS.

sections at the sides of the cut were reversed. The illustration is therefore herewith repeated, with the proper description under each cross section of guayule. This shows the thin bark of the irrigated guayule, the bark of medium thickness on a plant from the semi-arid district of Chihuahua and the thick growth of bark on guayule in its natural arid habitat.

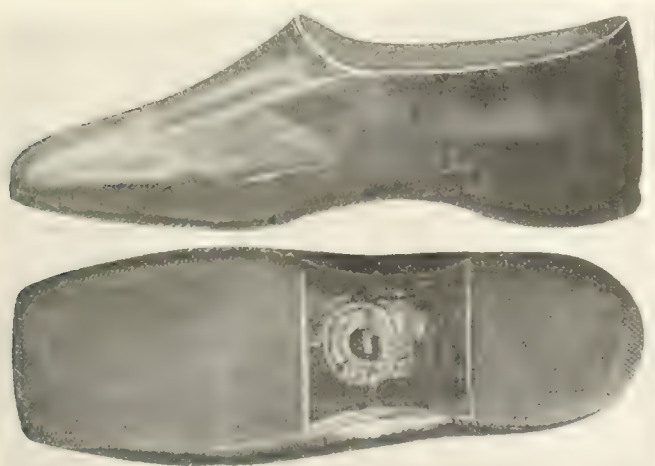
THE FIRST RUBBER SHOES MADE IN AMERICA.

WHEN Charles Goodyear secured a patent on his vulcanization process, sixty-nine years ago, he began at once to issue licenses to different manufacturers to use his process in the production of various rubber goods. The first license he issued was one for making rubber footwear, and this went to Leverette Candee, of New Haven, Connecticut. Very soon thereafter, however—that is, within a few months—he issued similar licenses to Ford & Co., of New Brunswick, New Jersey (which later became the Meyer Rubber Co.), to the New Brunswick Rubber Co., of the same place, and to Goodyear's Metallic Rubber Shoe Co., of Naugatuck, Connecticut; and all of these companies began making rubber shoes by the Goodyear process. The licenses included boots also, but rubber boots did not appear on the market until several years later.

Mr. Candee's first attempt to market these Goodyear rubbers was very interesting and rather expensive. Owing to the unfortunate experiences that consumers had had with earlier rubber products—those made before Goodyear's discovery—the whole rubber industry had come into ill repute, the products of the rubber mills growing hard and brittle in winter and melting in hot weather, so that it proved extremely difficult to interest the hard-headed Yankees in these new vulcanized goods.

As a result, the Candee salesman who started out through New England with his rubber shoes found that a great many people were disinclined even to give them inspection; and in order to secure a market the salesman gave away a good many introductory pairs. It was not necessary, however, to do this a second season, because it was soon discovered that the new vulcanized shoes were entirely different from the unvulcanized footwear of a few years before.

Probably not many pairs of the shoes made in 1844—the first year of rubber footwear manufacture in this country or, as far as that is concerned, in any country—are still extant, but through the courtesy of the "Commercial," of Winnipeg, we have secured photographic illustrations of two shoes made in that year by the New Brunswick Rubber Co., the cuts showing both a side and a sole view. These are women's shoes, and it will be noticed that they have no



A REEF OF 1844

heels. Women in those days were content to walk on such feet as Heaven had vouchsafed to them, and had not learned to resort to French heels and Cuban heels for the purpose of subtracting from the length of their feet to add to their stature. They wore heelless shoes and, naturally, rubbers to

fit them were also made heelless. Another noticeable feature is the squareness of the toes, pointed toes being at that time not at all in vogue.

Another point of difference from present-day footwear will be noticed in one of the shoes, which has four straps



FOUR STRAP LADY'S SANDAL, 1844.

over the instep. These open-vamp strap sandals were very popular in the earlier days, notwithstanding the fact that it was something of a nuisance to get all these straps on over the leather shoe. To obviate this difficulty and still keep the same effect, a few years later rubbers were made in imitation of the strap style, the vamp being a solid piece with raised lines showing the strap pattern. And for a long time rubber sandals with some sort of pattern stamped in the vamp were exceedingly popular, but they have not been seen now for at least two decades.

The sale of rubber footwear, while it grew continuously from the first year after Goodyear issued his licenses, grew very slowly, for the records show that seventeen years afterwards, in 1861, the entire rubber footwear production of the United States only amounted to 1,250,000 pairs, valued at a trifle over \$750,000. These figures look rather small when contrasted with the present output, which equals about 70,000,000 pairs of rubber boots and shoes a year, with a valuation of almost that many dollars.

BULLET PROOF TIRES FOR MEXICAN USE.

It is desirable in most parts of the world that automobile tires should be proof against stones, glass, nails and similar destructive objects that may naturally be found in the roadway; but in addition to all these qualities, tires meant for Mexican use ought to be bullet-proof. The publicity promoter of The Firestone Tire & Rubber Co. states that General Lucio Blanco, commanding the constitutionalist forces in Mexico, undoubtedly owes his life to the ability of his tires to withstand the bullets of the federal sharpshooters.

"Through flying bullets," the story runs, "General Blanco drove his Firestone-shod car into the thickest of the recent battle at Matamoros, Mexico. Tires, riddled with bullet holes, and with jagged scars, are mute testimonials that the federals could shoot straight, altho none of their shots penetrated the tough fabric. One large cut especially appears to be made by a glancing ball from a machine gun. The tires certainly proved their worth and quality, for Blanco never stopped. Firestone tires saved him from being taken prisoner."

Other manufacturers desiring to invade the Mexican market will take their cue from the above paragraph and see that their tires are proof against any and all of the projectiles used in modern warfare.

RUBBER QUARTER-TIPS ON LEATHER HEELS AND SOLES.

THE wonderful increase in the demand for rubber-soled shoes, some account of which appeared in a recent number of THE INDIA RUBBER WORLD, and the later development of special applications of rubber portions or insertions in leather shoes for modern dancing,* seem to have started a sort of epidemic among shoe manufacturers to experiment in other combinations of rubber and leather in their output.

Quite recently it was reported that some shoe manufacturers were making the heels of their shoes with a quarter-tip of rubber,



SOLE OF A COMPOUND OF RUBBER AND LEATHER WITH RUBBER TIPS VULCANIZED AS SHOWN.

this tip being placed on the outside and back of the heel, the place where probably eighty per cent. of the people wear their heels most. It is claimed that this spot bears the initial impact in walking, and that the quarter-tip therefore serves all the purposes of a full rubber heel lift, while the rest of the heel tread, of leather, prevents the slipping which forms the chief defect of the rubber heel.

The quarter-tip has also another argument in its favor. It is very generally conceded that rubber wears better and longer than leather. If this be granted, it stands to reason that a heel having twice the durability where the most wear comes will probably wear truer and more even than one which is homogeneous throughout its entire tread, thereby overcoming the tendency to run over or run down at the heel.

The quarter-tip is a piece of rubber soling shaped to conform to the curve of the heel. It has a flange which goes under the cut-off top-lift, and this flange assists materially in holding the tip in place under the heavy service required of it. The invention is an English one, and nearly every rubber heel manufacturer in Great Britain, and some Continental makers, include such quarter-tips in their catalogs, and find a large proportional sale. Inquiries of rubber heel manufacturers in this country



THE OLD LEATHER HEEL BEING REPLACED BY A RUBBER QUARTER-TIP. RUBBER QUARTER-TIP MADE IN ENGLAND.

bring the information that such quarter-tips have never come into general demand here, and altho some have been manufactured and offered to the trade, their production has quite generally been discontinued.

The use of the quarter-tip is, perhaps, the logical evolution of the protection of heels, and has been evolved from the metallic heel plate which, while preventing uneven wear, makes a noisy, inelastic tread, and, when worn smooth, is dangerously slippery. It is self-evident that rubber, for the same purpose,

is far better. To go further in this same direction, some manufacturers are reversing the rubber-leather sole, by a tip of rubber skived to a leather sole, this being designed for those persons who naturally wear the tips of the soles

to an excessive degree. Whether this idea is practical remains to be proved, for one of the reasons given for tipping the rubber sole with leather is the difficulty of making a permanent, durable joining of a rubber sole at the toe.



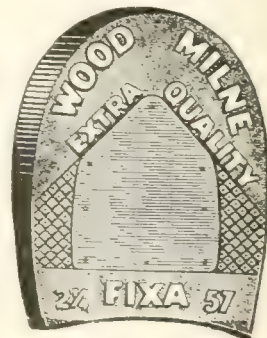
RUBBER HEEL-TIP MADE IN ENGLAND.

A modification of this scheme, and what seems to be an improvement, is shown by a Brockton shoe manufacturer who is using a sole compounded of rubber and leather by a patented process. In order to secure even wear at the points getting hardest service and which are worn away quickest, those parts are reinforced by a different compound, richer in fine East Indian rubber, and molded with the main body of the sole and heel in the vulcanization.

An adaptation of the rubber heel and quarter-tip idea is a half-tip of rubber with an insert of leather, and a rubber heel with a leather center. Both of these are of English origin.

What will be the next adoption of rubber in the manufacture of footwear is certainly an interesting question.

This idea of making the top lift of the heel of a shoe part leather and part rubber, with the rubber at the point of natural contact in walking, is not a new one; it was described in THE INDIA RUBBER WORLD, in May, 1909, and attention was called at that time to the difficulty that the shoemakers had in getting the rubber part to take on the same color as the leather. After much experimenting, however, a way was discovered in which this could be done. But while this division of the upper lift of the heel between leather and rubber is not new, there has not been until quite recently any great demand for these shoes. Between the new dances introduced within the last year or two, however, and the growing popularity of various sports, there has arisen quite a general request for shoes partially soled or heeled with rubber.



RUBBER HEEL WITH LEATHER INSERT.

TWO PRACTICAL USES FOR RUBBER BALLS.

One of the readers of a woman's magazine, who evidently is somewhat given to whitewashing her own ceilings and painting her own walls, describes in a letter for publication a method she has devised for avoiding the unpleasant experience of having whitewash or paint run down the handle of the brush, when working overhead. She buys a large, hollow rubber ball, cuts it in two, punches a hole in the centre of one half, and then pushes this hemisphere over the handle and close up to the brush, with the concave surface opening out. When the brush is used on the ceiling or the upper part of the wall, the paint or whitewash simply runs down into this improvised cup and collects there, from which it can be easily removed after the painting is over.

Another housewife has discovered a useful employment for a rubber ball in the cleaning of lamp chimneys. She takes a hollow ball, fits a stick into it, slits the sides, so that it can be compressed, and then pushes it into the lamp chimney. Naturally, the ball has a tendency to resume its proper shape, so that it swells out and fits snugly against the inside of the chimney. The rubber serves to remove all the dirt and when the chimney is clean it can be easily withdrawn.

The Obituary Record.

CAPTAIN FELIX H. HUNICKE.

WORD was received in New York on September 13 of the death by drowning at Colon, Panama, of Captain Felix H. Hunicke, well known to the American rubber trade for his researches in various rubber lands, and particularly because of the fact that he, more than any other American, was



CAPTAIN FELIX H. HUNICKE.

entitled to the distinction of having discovered the available rubber properties of the guayule shrub in Mexico.

Captain Hunicke was born in St. Louis in 1860 and after attending the public schools until the age of eleven, was sent by his father for a two years' course in the German schools. Returning, he graduated from the St. Louis high school and then received an appointment to the Naval Academy at Annapolis, from which he graduated with honors in 1881. After two years' service as a midshipman he resigned from the navy and became associated with his father's business, remaining in this work until the outbreak of the Spanish war in 1898, when he sold his business and volunteered his services to the government. He was made a lieutenant and placed second in command of the United States gunboat "Hist," where he remained during the war. It might be said, in passing, that this gunboat was in more engagements than any of the other boats patrolling the Cuban coast. At the close of the war Captain (then Lieutenant) Hunicke was appointed chief of the revenue cutter service for Cuba, a position which he occupied with exceptional ability for three years. The Federal Government sought still further to retain his services, but he resigned to resume commercial enterprises and very soon directed his attention to the rubber fields.

In 1904 he was sent to Mexico, to make a careful investigation of the possibilities of the guayule shrub, then beginning to attract attention. It was known that guayule contained a considerable percentage of rubber, but it had not been extracted commercially. This was the work that Captain Hunicke with the Lawrences undertook, and it was eminently successful. The first experiments were with crude machinery of his own construction until he was convinced which method was correct. As a result of these experiments, the Continental-Mexican Rubber Co. erected its mill at Torreon and guayule began to come into the American market in commercial quantities—quantities that grew with enormous rapidity up to the time when the revolutionary dis-

turbances in Mexico paralyzed all industries in that republic, including the extraction and shipment of guayule.

The last few years of Captain Hunicke's life have been spent largely in explorations in Central and South America and Africa in behalf of various large rubber interests. He left his home in Roselle, New Jersey, on the 13th of last June for a tour of inspection of certain rubber enterprises of South America. He had with him on this expedition five companions who had served under him on the gunboat "Hist" during the Spanish war.

He is survived by his wife and two sons.

HENRY P. MOORHOUSE.

The younger men in the American rubber trade will probably have but an indistinct impression of Mr. H. P. Moorhouse, for the greater part of his life was passed in Europe, his visits



HENRY P. MOORHOUSE.

to America being comparatively infrequent during the last two decades; but among the older rubber men he was not only well known but held in very high esteem, and the news of his death—which occurred recently in Paris—will cause them most sincere regret.

Mr. Moorhouse first went to Paris in 1872, to look after the interests of the American heirs of Hiram Hutchinson, Mrs. Moorhouse being one of the heirs. Hiram Hutchinson was a very prominent character in the rubber trade of the earlier days. He was associated with the old New Brunswick Rubber Co. and built the plant of the Newark Rubber Co. In 1853 he went to Paris and started a rubber manufacturing plant within a short distance of that city. He died in 1869, and three years later Mr. Moorhouse went to Paris and became identified with the Hutchinson company, remaining with it until 1883. From that time on he acted as the general continental representative of a number of American manufacturers, among them L. Candee & Co. of New Haven, for whose rubber footwear he became European agent. Later, when that company was merged with the United States Rubber Co., he became the Paris representative of the larger corporation, and continued in that capacity until about ten years ago. He acted as Paris representative of the Philadelphia Rubber Works Co. up to the time of his death.

Mr. Moorhouse was a man of very gentle disposition.

exceedingly popular in social as well as commercial circles. He was one of the most prominent members of the American business colony in Paris, his hospitality to visiting Americans being proverbial. Tho the last 40 years of his life were spent abroad, with only occasional visits to this country, he remained a staunch American, showing his patriotism by the deep interest he took in his fellow countrymen whom he met abroad. The late Charles L. Johnson, general manager of the United States Rubber Co., married Mr. Moorhouse's daughter in July, 1899.

PAUL E. BERTSCH.

Paul E. Bertsch, vice-president and general manager of the Motz Tire & Rubber Co., died on Sunday, September 10, at his home at Akron, Ohio. Mr. Bertsch was thirty-four years old, a veteran of the Spanish-American war, and a member of several prominent local societies and associations. He is survived by his wife and two children.

ALLAN W. PAIGE.

Allan W. Paige for many years president of The Derby Rubber Co., of Shelton, Connecticut, passed away after an attack of appendicitis while on a trip recently to the Pacific Coast. He was taken ill on the train, being removed to the Streator Hospital when the train reached Chicago. An operation was immediately performed but was unsuccessful as the disease was too far advanced. He did not rally from the operation.

GEORGE PELLINGER, JR.

George Pellingier, Jr., vice-president of the Vulcanized Rubber Co. of New York, died, as a result of an operation, at his home at Hauxhurst Park, Weehawken, New Jersey, on September 10. He was born in Butler, New Jersey, thirty-four years ago and had spent seventeen years or just half of his life in the rubber business, being associated during all that time with the Vulcanized Rubber Co. and its predecessor. His wife died about a year ago. He is survived by two young sons.

ROBERT E. J. C. TEALE.

Robert E. J. C. Teale, who was connected with the rubber trade for fifty years, died at his home on Lafayette avenue, Brooklyn, on the 26th of August, from pneumonia, after a short illness.

He was born in Brooklyn on June 1, 1848, received his education in the public schools and in 1863, at the age of 15, entered the employ of the Goodyear India Rubber Glove Co., then located on Broadway, near Fulton street, New York. He was gradually advanced in the service of the company until he became a salesman. In 1885 he resigned and formed a partnership with A. T. Morro, under the name of Teale & Morro. This partnership was dissolved in 1891, but Mr. Teale continued to sell rubber goods, particularly to the carpet and theatrical trade, until 1902, when he entered the employ of the J. W. Buckley Rubber Co., with which he was associated at the time of his death.

Mr. Teale came from an old Brooklyn family, his father being Thomas F. Teale, who published the first directory of that city and who was at one time lieutenant-colonel of the Thirteenth Regiment. Mr. Teale was married in 1877 to Miss Fanny Whitaker, a sister of the well-known Brooklyn artist, John Whitaker, art director of Adelphi Academy. He was a member of the organization known as "Old Brooklynites" and was associated with St. Mary's Episcopal Church. His wife, daughter and three sons survive him.

DRY FLOUR AS A RUBBER PRESERVER.

A certain housekeeper with an open and receptive mind has discovered that rubber rings, when they are removed from fruit jars, can be put away in dry flour and are perfectly good for use the next year, remaining soft and pliable. She states that rubber goods can be preserved for years in this way.

TREATMENT OF RUBBER SPONGES.

ALTHO the rubber sponge belongs to the more recent products of the rubber industry, and its general introduction has only taken place within the last ten years, it rapidly became recognized as competing with the natural sponge. Not only does this fact indicate a preference for the artificial, as compared with the natural product, but it likewise affords a proof that the rubber sponge fulfils requirements, particularly when properly treated in use.

That, nevertheless, complaints have been heard from consumers, is attributed, in the first place, to the insufficient attention paid to the destructive influence of the soap used. It is generally known that a sponge, even the best unbleached natural variety, is destroyed by the caustic action of many soaps. Rubber sponges in particular, when penetrated by particles of soap, become soft in the course of time, being consequently unpleasant to use. They, moreover, prematurely become smaller and lose their shape.

Commenting on the above facts, a writer in the "Gummi-Zeitung" refers to a proposal which has been made for cautioning purchasers against the use of soap with rubber sponges. It is, however, remarked that such a course would throw suspicion on the rubber sponge and its serviceability, which would not be agreeable to either manufacturers or dealers, the idea being thus conveyed that the article is not a perfect substitute for the natural product.

Of course the durability of a rubber sponge, like that of any other article, cannot be expected to be unlimited. The dealer should, however, inform the public how such durability may be increased. The customer should always be informed that after use the rubber sponge, like the natural kind, should be well washed, in order to prevent its premature destruction by the soap remaining in it. Natural sponges are often cleaned by hot water being poured over them and being allowed to bleach in the sun. This application of hot water, as well as solar heat, is, however, apt to injure rubber sponges, while placing them on heating or radiator pipes will cause them to lose their elasticity and to crumble away. Only with proper treatment can rubber sponges be expected to last. While natural sponges are usually well squeezed out after use and placed in a net for the purpose of drying, it often happens that rubber sponges, while still saturated with soapy water, are carelessly placed on the toilet table in a manner unfavorable to their drying.

It would, however, be a mistake for the rubber goods dealer to urge that soap should not be used with rubber sponges, but their proper treatment should always be recommended and explained. At the same time their many advantages should be pointed out, such as handiness of form, color, uniformity of pores, absorbent properties, softness of material, and advantageous effects on the skin.

What has been said as to rubber sponges for toilet use equally applies to those manufactured for industrial and domestic purposes. In almost every case, it is conceded that they compete with natural sponges, being largely used in stables, in breweries and distilleries (for washing bottles), for window cleaning, etc.

In conclusion, the opinion is expressed that if the recommendations for the proper treatment of rubber sponges are duly followed, a successful future is in store for the article.

EXPORTS OF MOTOR CARS TO SOUTH AFRICA.

The United States exported to South Africa in 1912 motor cars to the value of \$720,000, which was nearly three times the value of the exports for the preceding year, but only about one-half of the amount of exports of motor cars to that section from the United Kingdom.

News of the American Rubber Trade.

THE NEW OFFICIALS OF THE DERBY RUBBER CO.

A meeting of the board of directors of The Derby Rubber Co. held at the offices of the company at Shelton, Connecticut, August 22, 1913, John H. Goss, general manager of the Scoville Manufacturing Co., of Waterbury, Connecticut, was elected president and George E. Barber, general manager of the Star Pin Co., of Derby, Connecticut, vice-president, to fill the vacancies caused by the death of the former president, Allan W. Paige, of Bridgeport, and of Charles E. Clark, of Derby.

The board of directors consists of J. H. Goss, G. E. Barber, C. N. Downs, Henry Atwater, H. G. Runkle, T. F. Wood, Jr., and P. B. Price.

The reports of the treasurer and general manager, P. B. Price, were discussed, and in view of the excellent showing made during the past year it was unanimously voted to continue the operation of the mill under the present management.

Mr. J. H. Goss, the new president, is prominent in the brass business, having a vast fund of practical knowledge of manufacturing in all its varied branches, and is also an expert on factory costs and efficiency engineering. Mr. G. E. Barber, the new vice-president, is another man of unusual business and manufacturing ability; and the combined efficiency of Mr. Goss and Mr. Barber will naturally strengthen the operating and cost departments of the mill.

THE UNITED MALAYSIAN GETS AN AWARD.

The August issue of THE INDIA RUBBER WORLD contained a detailed account of the Universal Exposition held in Ghent, Belgium, in the early part of the summer. An important feature of this exhibition was the "colonial exhibit," in which there was a large display of rubber from Belgian colonies. This rubber department contained over a thousand separate exhibits, and among them one made by the United Malaysian Rubber Co. of New York, London and Singapore, and with plantations in Borneo—which deals in special brands of Malaysian crepe rubber and jelutong, and Malaysian resins. The company recently received a communication from the commissioner general of the exhibition saying that its exhibit had been awarded the Diploma of Honor. In view of the large number of competitive exhibits, the company naturally feels much gratification over this award.

USES ONLY "SNOW WHITE SEAL."

William H. Scheel, 159 Maiden Lane, New York, importer of superior qualities of oxide of zinc, received a letter recently from one of the large rubber manufacturers saying that he had decided to use "Snow White Seal" exclusively, such had been his success with this brand. In addition to this brand Mr. Scheel handles gradings known as Red, White and Green Seals, which are of particular interest to manufacturers of rubber tires.

THE BALLOON "GOODYEAR" TO RACE ABROAD.

A fine aerial race is booked for the 12th of October, to start from the Garden of the Tuileries in Paris. Among the competitors which are after the Gordon-Bennett Cup will be the balloon "Goodyear," entered by The Goodyear Tire & Rubber Co., of Akron. This balloon weighs, including basket, net, ropes, and all the rest of its paraphernalia, 1,100 pounds. It is constructed of two-ply cotton rubberized fabric, and it has a capacity of 80,000 cubic feet. It will be piloted by R. H. Upson, of Akron, who has already had quite a little experience and not a little success in operating this same craft. He won the National Elimination Race in Kansas City on the 4th of July last. He left for Europe in August, in order that before the race took place he might visit and inspect the various balloon and aeroplane factories on the continent.

FIRESTONE EARNINGS.

Reports of the annual meeting of the Firestone Tire & Rubber Co. stockholders indicate for the year ending July 31, 1913, a gain in the gross earnings of the company of \$3,500,000 over those of the previous twelve months and show net profits of \$1,600,000, of which only \$350,000 was disbursed, the balance being carried to surplus. The liabilities of the company are reported at about \$2,000,000, for bills payable, and the assets at approximately \$7,000,000, of which amount \$3,000,000 is represented by merchandise stocks and bills receivable.

THE PENNSYLVANIA RUBBER CO. ADDS TO PLANT.

With one new four-story addition to its plant just completed and two more new buildings under process of erection, the Pennsylvania Rubber Co. of Jeannette, Pennsylvania, expects by next season to be able to treble its present output. The completed addition contains about 25,000 square feet of floor space, and the buildings now being erected will contain about 190,000 square feet. The factory building is also to be four stories high, of steel and concrete, 193 x 138 feet. The fourth floor will be devoted in part to new offices, two floors to the manufacture of automobile tires, and the rest of the space to the production of other kinds of tires. The building which is to contain the power plant and engine room will be 70 x 130 feet. The equipment of boilers is to be in every way up to date, these to be supplied with automatic stokers, and power to be furnished by turbine-driven electric generators. These two new buildings are to be entirely separate from the present plant.

THE FAULTLESS RUBBER CO.

At the annual meeting of the Faultless Rubber Co., held at the company's offices at Ashland, Ohio, on July 25, plans were considered for the erection of additional factory buildings; and since that time quite an extensive tract of land has been purchased for this purpose. The company now contemplates the erection of one brick and concrete factory building, 60 x 180 feet, two stories high, work on which will be started early in the spring. The new building will be used for general manufacturing purposes and is to contain the calender room. The officers elected at the annual meeting were: T. W. Miller, president and treasurer; P. A. Myers, vice-president; I. L. Miller, secretary, and C. E. Campbell, general manager; and these, with Mr. F. E. Myers, constitute the board of directors.

NASSAU TIRES IN A GRUELING TEST.

The Thermoid Rubber Co., of Trenton, New Jersey, takes a great deal of satisfaction in the record of its Nassau tires in the Elgin Road Race of August 30. These tires were used on a car driven by Ralph De Palma, which went over the entire course of 302 miles at the rate of 71½ miles per hour. After the race he telegraphed the company as follows: "Three Nassau tires went through entire Elgin Road Race. Only changed one on account of puncture. Am thoroughly pleased with showing. Will use same tires again at Corona September ninth."

They were also used on a car driven by "Bob" Burman, who did 160 miles of the course at a terrific rate of speed without changing a single tire. The company asserts that these were not special tires made for racing but tires taken out of regular stock.

LARGE INCREASE IN SALES OF U. S. TIRES.

The United States Tire Co.'s business for the first eight months of the present year shows an increase in net sales of 28.7 per cent. over the same period in 1912. The earnings of the Rubber Goods Manufacturing Co. show a substantial increase over last year, tho it is impossible at this time to tell the exact amount of this increase as the company's year does not end until the 31st of December.

THE HARTFORD COMPANY'S FINE NEW POWER PLANT

The Hartford Rubber Works Co., Hartford, Connecticut, recently completed one of the best equipped power plants probably to be found anywhere in the United States. The accompanying illustration shows this new plant, together with the old plant, which stands immediately in front of it, with the square chimney. The growth of the company's business during the last few years has necessitated an increase in its power capacity, and one boiler after another was added to the equipment until for economical operation it was found to be desirable to abandon the old plant entirely and substitute for it an altogether new plant. This new power house, built of reinforced concrete, has a frontage of 110 feet and is located on a private siding of the N. Y., N. H. & H. R. R. It is a most interesting illustration of the amount of work that can be done automatically in such a plant, as will be shown by the following description:

The coal cars are run over weighing scales, and the bottom of the car opens over the hopper in the track which drops the coal immediately into a crusher where the large lumps



PLANT OF HARTFORD RUBBER WORKS CO.

are reduced to uniform size, and passed on over a conveyor to the overhead coal bin which holds 1,500 tons. The coal is distributed equally in the bins, which are situated over the bunkers of the Murphy automatic stokers. The traveling weighing feeder takes the coal from the overhead bin, automatically weighs it as it feeds to bunker over the stokers, which automatically feed the fire.

These Murphy stokers are attached to the Bigelow-Hornsby vertical tubular boilers, of which there are two units of 1,000 horsepower each. They are so located in the boiler house as to be accessible from all four sides and are in a room 72 feet high. The west side of this room is entirely of glass and topped with glass ventilators, so that the room where the boilers are fired is one of the most comfortable in the entire plant.

The ashes are automatically dropped from under the stokers and conveyed to an overhead ash bin, and the wagons which take the ashes away are automatically filled by raising a single lever. The boiler plant is equipped with all of the latest recording devices for flow of steam meters, C20 recorders, and draft recorders, which automatically make a daily report of the amount of water evaporated and the amount of steam transmitted to each department, and also the amount of coal used in its production.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

TRADE NEWS NOTES.

Electric power is to replace, to some extent, the steam power heretofore employed at the Fisk Rubber Co. plant at Chicopee Falls, Massachusetts. The work of substitution is now in progress and when completed will permit of the use of from 2,000 to 3,000 h. p., the current to be supplied by the Amherst Power Co.

Another link has been added to the chain of "Crocker System" stores—of which there are now eleven in New England—by the opening at Fitchburg, Massachusetts, of a store in the Bassett building on Main street. This enterprise will be conducted under the management of Mr. George I. Crocker, and will be known as The Fitchburg Rubber Co.

An award has been made for certain of the work connected with the erection of a new three-story, 60 x 130 foot factory at Naugatuck, Connecticut, for occupancy by The Rubber Regenerating Co.

Two new factory buildings are being added to the plant of The Gordon Rubber Co. at Beach City, Ohio—these to be 40 x 50 and 40 x 200 feet respectively, one story high and of brick construction.

The Faultless Rubber Co., of Ashland, Ohio, is soon to extend its factory space and equipment, having purchased for that purpose a site adjoining its present location.

The Chester Rubber Tire & Tube Co., incorporated at Charleston, West Virginia, is now negotiating the sale of its stock, and when the necessary \$25,000 worth has been disposed of the company is expected to locate in Chester, Ohio, using for its plant the building at Ninth street and Carolina avenue now occupied as a car barn and machine shop. It is reported that about 200 shares of common stock have been sold, \$15,000 subscribed and \$5,000 more promised. The officers of the company are: John E. Newell, president; George Arner, vice-president; George Hasson, secretary, and A. L. Skinner, treasurer.

The large increase in the business of the Elwell Rubber Co. recently has led to the installation of additional machinery in its plant at Stoughton, Massachusetts, the former factory of the Plymouth Rubber Co.

The firm of George E. Goble & Co. has recently been formed at Detroit, Michigan, with headquarters at 680 Woodward avenue, where it will represent the Lee Tire & Rubber Co. and the Victor Rubber Co., in addition to handling the business in that city of some of the carriage equipment concerns.

The Hall Rubber Co., at 1402 Ridge avenue, Philadelphia, has been appointed to the agency for Motz tires in Pennsylvania, Maryland and Delaware. A service department for Motz tire users is also to be established, under control of the Hall Rubber Co. and personally superintended by W. M. Stubbs, former manager of the Motz company's branch in Philadelphia.

Messrs. Buist & Siegrist, located at 633 North Broad street, Philadelphia, have taken the agency for Falls Rubber Co. tires, and have organized a sales force to cover the territory granted them, which extends from New York to Florida.

A lease of the building situated at 240 West Fifty-sixth street, New York, has been taken by the Empire Rubber & Tire Co., for a term of years.

The J. H. Stedman Co. has sent out an announcement to the trade that it has moved its business to South Braintree, Massachusetts, where it has a plant on the Fall River division of the N. Y., N. H. & H. R. R. It will, however, maintain a Boston office at 176 Federal street.

The winner of the 250-mile race at Corona, California, on September 9, where a speed of 74½ miles per hour was maintained, drove a car equipped with Firestone tires.

NEW INCORPORATIONS.

Anglo-American Rubber Corporation, September 15, 1913; under the laws of New York; authorized capital, \$75,000. Incorporators: Robert F. Rubens, Frederick B. Daniels and George L. Fox, Jr.—all of 583 Fourth street, Brooklyn, New York. To manufacture and deal in rubber goods.

Auto & Tire Sales Co., August 22, 1913; under the laws of Delaware; authorized capital, \$100,000. Incorporators: F. D. Buck, George W. Dillman and B. M. Grawl—all of Wilmington, Delaware. The corporation is authorized to manufacture, sell and deal in automobiles and all parts and accessories thereof, and to carry on any trade or business connected therewith.

Blodgett Rubber Co., August 20, 1913; under the laws of Delaware; authorized capital, \$150,000. Incorporators: Herbert E. Latter, Norman P. Coffin and Oscar J. Reichard—all of Wilmington, Delaware.

Blumenthal-Prager Tire & Rubber Co., August 13, 1913; under the laws of Michigan; authorized capital, \$1,000. Incorporators: Louis H. Prager, George D. Blumenthal, Celia Blumenthal and David Blumenthal—all of Detroit, Michigan. General repairing and vulcanizing business and to deal in rubber goods and automobile accessories.

The Bowling Green Rubber Co., September 3, 1913; under the laws of Ohio; authorized capital, \$25,000. Incorporators: Charles W. Greene, Cecelia P. Cope, Mont Clouse, M. L. Cope and Loren Campbell. Location of principal office, Bowling Green, Ohio. The manufacture of rubber tires, automobile tire supplies and accessories and all rubber goods.

The Clingfast Rubber Heel Co., August 22, 1913; under the laws of Massachusetts; authorized capital, \$200,000. Incorporators: Essex S. Abbott, Charles H. Gassett—both of Hotel Curtis, Melrose, Massachusetts, and Arthur E. Wilson, 418 Medford street, Somerville, Massachusetts. The manufacture of rubber heels and all other articles of rubber.

The Columbia Tire Association Co., September 5, 1913; under the laws of Ohio; authorized capital, \$10,000. Incorporators: E. L. Henderson, Thomas Mackiernan, Harold Mackiernan, A. E. Albright and R. E. Henderson. Buying and selling automobile tires, automobile accessories, rubber goods of all kinds, druggists' sundries, mechanical rubber, etc.

E. A. Corwin Co., August 22, 1913; under the laws of Vermont; authorized capital, \$10,000. Incorporators: Ernest A. Corwin, Jessie G. Corwin, Harold E. Corwin—all of Chelsea, Vermont. To buy and sell rubber articles, etc.

The J. P. Gordon Co., August 20, 1913; under the laws of Ohio; authorized capital, \$500,000. Incorporators: John P. Gordon, Alois F. Hegelheimer, Irvin E. Persig, Frederick C. Brock and Arthur F. Reinhard. Location of principal office, Columbus, Ohio.

The Goodyear Rubber Co., August 28, 1913; under the laws of Wisconsin; authorized capital, \$500,000. Incorporators: Frederick M. Shepard, Frederick M. Shepard, Jr., and Newell C. Shepard—all of 787 Broadway, New York. Manufacturing and dealing in india rubber and gutta percha goods and other merchandise.

The McGraw Tire & Rubber Co., April 8, 1913; under the laws of Ohio; authorized capital, \$1,000,000. Incorporators: E. C. McGraw, James Chaplin, C. H. Bolton, John S. Wilson, R. F. Taggart and L. M. Keyes—all of East Palestine, Ohio. The corporation is organized for the purpose of manufacturing and dealing in rubber tires, rubber goods, automobile and motor vehicle accessories, etc.

Motor Tire Sales Co., July 17, 1913; under the laws of Illinois; authorized capital, \$2,500. Incorporators: F. Hutchinson, Emma Roesing and Alice S. Dwyer—all of Chicago, Illinois.

National Rubber Realty Co., August 22, 1913; under the laws of Pennsylvania; authorized capital, \$5,000. Incorporators: Joseph E. Cotter, 2034 Ritner street, Philadelphia; C. U. Martin, 5837 Chester avenue, Philadelphia, and F. S. Garman, 318 Cooper street, Camden, New Jersey. Location of principal office, Pottstown, Pennsylvania. To purchase, sell, exchange, hold, mortgage, improve, lease and let real estate.

The National Tire & Rubber Co., August 30, 1913; under the laws of Ohio; authorized capital, \$150,000. Incorporators: C. J. Davis, R. T. Taggart, William Smith, A. E. Albright and John Kennedy Ewing, Jr. Manufacturing, buying, selling and dealing in rubber tires, rubber goods, etc.

The Nemo Chemical & Specialty Manufacturing Co., August 15, 1913; under the laws of Illinois; authorized capital, \$2,500. Incorporators: Conrad E. Nichoff, Henry A. Gano and John T. Whitehead. To manufacture, sell, buy and merchandise rubber products, etc.

New England Raincoat Co., September 3, 1913; under the laws of New York; authorized capital, \$3,000. Incorporators: Philip Braslow, 539 East 171st street; Meyer Selsman, 447 Wendover avenue, and Solomon Frummer, 8815 Bay 15th street—all of New York. To manufacture and sell raincoats, etc.

Nicholas Tire and Rubber Co., September 9, 1913; under the laws of New York; authorized capital, \$5,000. Incorporators: James C. Nichols, 67 Franklin avenue, New Rochelle, New York; William B. Hughes, 879 West End avenue, New York, and David L. Fultz, 2112 Beverly road, Brooklyn, New York. To manufacture tires, etc.

The Peerless Co., September 9, 1913; under the laws of New Jersey; authorized capital, \$25,000. Incorporators: John Green, Eugene H. Sadler and Jacob F. Meyer—all of Newark, New Jersey. The manufacture of raincoats.

Punctura Inc., July 11, 1913; under the laws of California; authorized capital, \$200,000. Incorporators: Albert Maurice Lambert, Konrad Kather, G. A. Weihe, Eric J. Rosenstirn and John D. Griffin—all of San Francisco, California. To manufacture the articles known as "Punctura" and to do other business in the rubber goods line.

Rolle Rubber Co., September 10, 1913; under the laws of New York; authorized capital, \$5,000. Incorporators: Edward F. Rolle, 108 West Forty-third street; Adele Olsen, 1094 Woodycress avenue—both of New York, and Richard J. Thomas, 208 Hudson street, Hoboken, New Jersey.

Rutherford Rubber Co., January 16, 1908; under the laws of New Jersey; authorized capital, \$300,000. Incorporators: H. O. Coughlan, L. H. Guenther and John R. Turner—all of 15 Exchange place, Jersey City, New Jersey. The manufacture and sale of rubber tires for vehicles, etc.

The Sanitary Rubber Co., September 4, 1913; under the laws of Ohio; authorized capital, \$50,000. Incorporators: John J. Lisbae, Elizabeth Lisbae, Lester King, Clarence G. Noegling and Frederick W. Crankshaw. Manufacturing and dealing in all kinds of goods and articles made by using rubber therein.

South Side Tire Co., September 8, 1913; under the laws of Illinois; authorized capital, \$10,000. Incorporators: L. A. Cohen, E. A. Linderholm and John W. Bissell. Place of business, 61 East Garfield Boulevard, Chicago, Illinois.

Stodder Tire & Rubber Co., August 19, 1913; under the laws of California; authorized capital, \$100,000. Incorporators: Lee Stodder, W. Macnider and Stewart A. Stodder—all of Los Angeles, California.

Taunton Rubber Co., August 25, 1913; under the laws of Massachusetts; authorized capital, \$30,000. Incorporators:

Albert A. Ormsbee, 4½ Silver street; Charles S. McCall, 19 Charles street; George Greene, 42 Kilton street; Henry G. Crapo, 8 Crapo street, and Frank E. Wellman, 38 East Walnut street—all of Taunton, Massachusetts. Manufacturing and dealing in rubber and leather heels, etc.

Texas Guayule Co., September 19, 1913; under the laws of New York; authorized capital, \$10,000. Incorporators: Salvador Madero, Ernest Madero—both of 115 Broadway, New York, and Nathan A. Smyth, 60 Broadway, New York.

Tire Buyers, Inc., August 9, 1913; under the laws of Maine; authorized capital, \$600,000. Incorporators: Henry Hudson, James H. Hudson, Otis Martin, Frank Martin, A. W. Drake and C. S. Bennett—all of Guilford, Maine. To buy, sell, import, export, manufacture and generally deal in automobile tires, casings, tubes, etc.

Unsinkable Bathing Boat Co., September 18, 1913; under the laws of New York; authorized capital, \$50,000. Incorporators: Margaret J. Johns, Thomas L. Zimmerman, Jr., and Arthur Johns—all of 60 Wall street, New York. Manufacturers of unsinkable boats, rubber goods, etc.

RUBBER COMPANY DIVIDENDS.

The Rubber Goods Manufacturing Co. paid on September 15 a regular quarterly dividend of 1¾ per cent. on its preferred stock and a 2 per cent. dividend on its common stock. Three months ago its common dividend was 1 per cent. and six months ago it was 6 per cent.

The Canadian Consolidated Rubber Co., Ltd., has declared a regular quarterly dividend of 1¾ per cent. on its preferred and of 1 per cent. on its common stocks, payable October 1 to stockholders of record on September 20.

The Intercontinental Rubber Co. paid on September 30 a regular quarterly dividend of 1¾ per cent. on its preferred stock of September 20 record.

The B. & R. Rubber Co. has declared a regular quarterly dividend of 1¾ per cent. on its preferred stock and a dividend of 2 per cent. on its common stock—payable October 1 to stockholders of record on September 22.

CHANGE OF NAME

The corporation hitherto known as C. Roberts Rubber Co. changed its name on September 20 last to Eberhard Faber Rubber Co., the officers of the company remaining the same as heretofore. The business of the concern will continue in every respect as formerly, with the one exception of the change of name.

FOREIGN TRADE OPPORTUNITIES.

A resident of a Latin-American country informs an American consulate that he desires estimates, quoted in United States gold, f. o. b. New York, covering machinery for a plant to manufacture steel, aluminum and rubber horseshoes. He has a customer who is prepared to pay cash as soon as the plant is in running order, and will deposit the money with a bank or importing house in advance, with the understanding that it is to be paid over when the plant is completed. The number of the consular report is 11,699.

AMERICAN LAMPBLACK WANTED.

An American consular report states that a well-known firm abroad, dealing in crude drugs and chemicals, wishes to get into connection with American producers of lampblack and gasblack, as well as of technical and pharmaceutical specialties. Replies should be addressed to No. 11519, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

TWO POPULAR CRUDE RUBBER MEN.

Mr. Xavier W. Obalski and Mr. Edward C. Sweeney, Jr., whose photographs are here reproduced, represent De Lagotellerie, the French crude rubber house, in this country and have offices at 24 and 26 Stone street. Mr. Xavier W. Obalski



XAVIER W. OBALSKI.

was born in Nantes, France, in 1880. He spent the early part of his life in Pará and Manaós, later completing his education and military service in France. After three years' business training in the service of the De Lagotellerie houses in Nantes and London—his father at that time being one of its heads—he came to America in 1906 and became associated with Mr. C. P. dos Santos, the former agent for Denis Crouan Fils, who was the pre-

decessor to the present firm of De Lagotellerie, of New York and Paris.

Mr. Edward C. Sweeney, Jr., was born in St. Pierre, Miquelon, in 1883. He came to America in 1899—after completing his education in St. Pierre—and entered the service of the French Telegraph & Cable Co. in New York—of which his father is general manager. In 1903 he entered the service of the International Banking Corporation, an institution with branches in the Far East and Central America. In 1910 Mr. Sweeney started in the importing and exporting business on his own account, later joining forces with Mr. Obalski. These gentlemen are of most attractive personality and very popular with their associates in the trade.



EDWARD C. SWEENEY, JR.

A PNEUMATIC PLUG FOR PNEUMATIC TIRES.

A great variety of repair appliances for pneumatic tire punctures has been devised, but here is rather a new one, which comes from the State of Washington. It consists of a plug with a hollow base which is inserted through the puncture and then inflated, so that it is bound to be an air tight fit no matter how large the puncture is.

PERSONAL MENTION.

Mr. William A. De Long, who has devoted most of his time during the last two months to adjusting the affairs of the New York Commercial Co., sailed for England on the "Lusitania" on September 3, to be gone six or seven weeks on business in connection with the settlement of the company's affairs.

Mr. Beach L. McClaren, formerly connected with the United States Rubber Co., and for the past year vice-president and general sales manager of the Racine Rubber Co., has recently been elected president and general manager of the Mitchell-Lewis Motor Co., a corporation of Racine, Wisconsin, with a capital stock of \$10,000,000.

Mr. John L. Hamilton has been appointed manager of the Boston branch of The Endurance Tire & Rubber Co., of New York City, from which point the New England trade is to be supplied.

Mr. Edward J. McCaffrey is to act as manager of the Federal Rubber Co.'s business at Philadelphia.

Mr. George Benninger, who claims the record for the number of tires mounted in one day, with 310 to his credit, has been connected for the past five years with one of the Studebaker plants in Detroit, as foreman of the repair department, and during that time is said to have mounted a quarter of a million automobile tires.

Mr. E. F. Holliday has assumed the management of the Chicago Tire & Supply Co., located at 2129 Michigan avenue, Chicago, coming to this position from a previous connection with the Federal Rubber Mfg. Co.

Mr. Stafford H. Pratt, lately graduated from the rubber school of the Northern Polytechnic Institute, Holloway, London, recently arrived in America with the expectation of associating himself with one of the large rubber manufacturing plants. He will probably locate in the west.

Mr. Anton Berg returned to New York on September 16 from Christiania, Norway, where he has been passing the last two months. The August issue of this paper made mention of the work that Mr. Berg has been doing in Akron during the last two years in the installing of machinery for making balata belting and packing—in which line he is a recognized authority. He returns with the expectation of continuing this work in other parts of the country. His address is care the Norwegian Consulate General, New York City.

Mr. George B. Hodgman, president of The Hodgman Rubber Co., and also president of The Rubber Club of America, has been chosen as a delegate to represent the club at the Fourth International Rubber Exposition to be held in London next July.

Mr. E. H. Cutler, known to a great many rubber men because of his former connection with the industry, is now acting as agent for The Scribner Music Club, New York.

A VALIANT CHAMPION OF GOOD ROADS.

The cause of good roads finds a valiant champion in F. A. Seiberling, president of The Goodyear Tire & Rubber Co., of Akron. Mr. Seiberling states it as his belief that if every state would set aside one or two days each year for this cause, and if the citizens would contribute liberally, splendid results might be achieved, of benefit not only to those who use the roads for pleasure automobiling, but to suburbanites generally and to the farmer in particular, affording him better and correspondingly quicker marketing routes.

THERMOID RUBBER BUMPERS.

The Thermoid Rubber Co., of Trenton, N. J., makes a great variety of rubber bumpers for motor cars. They are made in any width, to fit the different width of springs, and in any shape that may be desired; and in order to fit the different economic tastes and pocketbooks, they are made in five different grades, ranging from a high-priced bumper to one of extremely low price, the quality naturally varying with the price charged.

GEORGE B. DRYDEN.

This is an excellent likeness of George B. Dryden, president of the Dryden Hoof Pad Co., making a general line of molded specialties, with offices and factory at 1014 South Forty-third avenue, Chicago, Illinois.

Mr. Dryden started in the rubber business in February, 1897, as salesman for Kelly, Maus & Co., at Chicago, who had the agencies of a number of standard tire concerns.

In 1898 Mr. Dryden, in conjunction with H. S. Firestone, formed the Imperial Rubber Tire Co., taking over the rubber tire business of Kelly, Maus & Co., and was the secretary and treasurer of that organization until it was acquired—two years later—by the Rubber Wheel Co., later known as the Consolidated Rubber Tire Co.



GEORGE B. DRYDEN.

which concern Mr. Dryden represented as Chicago manager for several years. Subsequently he acquired this business, which he operated under the name of the Dryden Rubber Tire Co. In 1901, the Dryden Hoof Pad Co. was formed as a selling organization, and eight years later it developed into a manufacturing business; and last year saw the organization of the Peerless Rubber Horse Shoe Co. At the present time, Mr. Dryden is president of the Dryden Rubber Co., president and treasurer of the Dryden Hoof Pad Co., treasurer of the Peerless Rubber Horse Shoe Co., and is recognized as an aggressive and efficient member of the western rubber trade. Personally, he is courteous and exceedingly companionable, having a host of friends throughout the trade.

MR. L. P. DESTRIKATS GOES ABROAD.

Mr. L. P. Destribats, vice-president of the Ajax-Grieb Rubber Co., sailed Wednesday, September 10, on the "La France" for France, where he expects to spend a vacation of about two months. Altho Mr. Destribats was born in France, this is his first visit to that country since he left twenty years ago. He has been connected with the Ajax-Grieb company since its formation in 1905.

MR. BACON BECOMES A PUBLIC ACCOUNTANT.

Mr. Oliver Bacon, who was connected with Geo. A. Alden & Co. for more than twenty years—for the last ten years of that time acting as chief accountant and general auditor—has opened an office as a public accountant at 220 Devonshire street, Boston. If there is any virtue in experience, Mr. Bacon, after his twenty years of acquaintance with rubber accounts, ought to be particularly well qualified to do this sort of work for anybody in the rubber trade.

A HEEL WITH TWO KINDS OF RESILIENCY.

S. L. Kelly, of Grand Junction, Colorado, has taken out a patent for a heel-seat to be used on a shoe with a leather heel, consisting of a rubber cushion between two aluminum plates, the peculiarity of the cushion being that it contains three holes in which are inserted coiled springs, the spring co-operating with the rubber to relieve the jar in walking.

PROOFERS AND RUBBERIZERS FORM AN ASSOCIATION

The August issue of *The India Rubber World* contained a letter from a proofer who has had some rather unhappy experiences with certain garment manufacturers, who, according to his statement, often made claims on the proofers for the full value—and more than the full value—of manufactured goods, on the ground that the proofing had been defective, when as a matter of fact the defect arose either from poor workmanship in their own factories or from improper storing of goods, or from other causes for which the manufacturers were solely responsible.

To meet this and similar situations, and for general mutual benefit, the rubberizers and proofers have formed an association, known as the Raincoat-Cloth Merchants Association, with offices at 149 Broadway, New York. Mr. J. G. Maier is the manager of the association, and Albert & Albert are the counsel.

MEETING OF THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

The semi-annual meeting of the National Association of Cotton Manufacturers was opened on September 30 at the Chalfonte, Atlantic City, New Jersey. The address of welcome was given by Mayor Riddle of that city. The session will continue through the first two days of October.

AN ADDITION TO THE WOONSOCKET MILL.

The Alice mill of the Woonsocket Rubber Co., where the company's shoes are made—and which is situated in Woonsocket, Rhode Island—has for many years been known as one of the largest footwear plants in the United States, its main building being 70 feet wide by 420 feet long, with two bays 60 feet wide and 140 feet long. But even this great structure was evidently not sufficient for its requirements, as it now has in course of erection a large addition, 56 x 80 feet, four stories high and basement, made of brick-faced steel construction. This is located at the northwest corner of the present main building. A noticeable feature of this new addition is its tremendous window area, which will flood every working room with light.

AN AUTO CLUB'S FINE BUILDING.

A location on Eastern Parkway, Brooklyn, opposite the Museum of Arts and Sciences and very near the main entrance to Prospect Park, has been chosen as the site of the new home of the Long Island Automobile Club; and if the proposed plans are successfully carried out the clubhouse should do credit to this fine section of city, the intention being to erect an \$85,000 building, three stories high and equipped with dining and grill rooms, billiard parlors and all modern features. The grounds of the club extend through the block from Eastern Parkway to Lincoln place, and members will enjoy the privileges of the machine shop and garage which are also included in the building plans.

NO CUT IN TIRE PRICES IMMINENT.

Some of the daily papers have published a paragraph to the effect that the larger tire companies have quite a stock of crude rubber, bought at considerably higher prices than those prevailing at the present time, and that in consequence their profits have been reduced to a paltry 7 or 8 per cent., while the smaller companies, never having capital enough to buy rubber ahead, and buying from day to day, are using the low-priced rubber now being offered, and by reason of this rubber economy are able to make 15 or 16 per cent. at present tire prices. The writer goes on to say that the larger companies are tired of holding the umbrella over their small brothers and that they contemplate a radical reduction in tire prices for the purpose of shaking out the little fellows. Inquiry among the big makers of tires fails, however, to substantiate this report, and there seems to be no immediate prospect of a reduction in the current price of tires.

THE ASKAM RUBBER CO.

The Askam Rubber Co., whose incorporation was mentioned in the August issue of this paper, is building a plant in the town of Milford, Connecticut, on the Wopopaug river. The main building is to be 60 x 175 feet, and one-story high, with an additional building 50 x 75 feet for laboratory work and particularly for the chemical treatment of stock. The product of the mill will be high-grade reclaimed rubber (which will be known as the "Arco grade") from automobile tires, and the plant at the beginning is to have a capacity of 4 tons a day. The mill will be under the personal charge of W. F. Askam, the president and general manager.

RUBBER STAMP MAKERS MERGE.

The plant of H. C. Dimond & Co. has been sold to the Union Stamp Works, Boston, Massachusetts, and the combined business of the two concerns will hereafter be carried on under the name of The Dimond-Union Stamp Works, with offices and factory at 175 Washington street, that city. The Dimond company was established in 1875 and was the oldest stamp house in New England, as the new company is said now to be the largest.

THE THREE OLDEST MAKERS OF RUBBER STAMPS.

Among those who attended the Stamp Makers' Convention recently held in Minneapolis were J. E. Taylor of Cleveland, Ohio; Chas. Everson, of Everson & Reed, New York City, and L. E. Scotford, president of the Superior Type Co., Chicago, Illinois—all prominent not only in convention matters but in the stamp trade generally, and famous as being the three oldest stamp manufacturers, in point of their connection with the trade, in the United States, the same having covered periods of 42, 39 and 37 years respectively.



STAGGERED TREAD?

This highly artistic and thoroughly illuminating picture is taken from the columns of "Life" where it has the following sub-line: "What we pedestrians need is the non-skid banana peel." That is undoubtedly quite true, but would not anyone who analyzed this picture carefully be justified in saying that this particular pedestrian was equipped with the famous Staggered Tread?

WOVEN STEEL HOSE & RUBBER CO. ADDS TO PLANT.

Extensive additions to the plant of the Woven Steel Hose & Rubber Co., of Trenton, New Jersey, have been contracted for, and land adjoining the present site has been purchased, more than equaling in area that formerly occupied by the company. A number of patented machines have recently been installed for the production of its "Protector" brand of Woven Steel Pneumatic Tool Hose. An officer of the company, however, is authority for the statement that its greatest expansion has been in automobile brake lining and friction clutch rings, as well as for the information that 5,000 locomotives are now equipped with its squirt hose. The new building, for which contracts have been let, is to be 60 x 130 feet, two stories high, of concrete, brick and steel, and is to contain, besides offices, the receiving and shipping departments.

REPORT OF THE ASBESTOS CORPORATION OF CANADA, LTD.

The first annual report of the Asbestos Corporation of Canada, Ltd., which in June, 1912, took over the old Amalgamated Asbestos Corporation, Ltd., shows for the seven months ending December 31, 1912, net earnings to the amount of \$150,304, leaving a surplus of \$68,082 after deducting bond interest amounting to \$82,222. The directors' report speaks of these earnings as "fairly satisfactory in view of the conditions that obtained prior to the beginning of operations by the company." The company at the time of the report was operating three plants—the Kings and Beaver properties at Thetford Mines, and the British Canadian property at Black Lake. The summarized balance sheet is given below:

ASSETS.

Plant	\$9,112,012
Bonds, treasury	25,000
Asbestos, etc.	404,208
Bills receivable	129,536
Cash	490,479
Insurance, etc.	8,648
Total	\$10,169,883

LIABILITIES.

Bonds	\$3,000,000
Preferred stock	4,000,000
Common stock	3,000,000
Accounts payable	71,210
Accrued liabilities	5,590
Other liabilities	25,000
Surplus	68,083
Total	\$10,169,883

A NEW ASBESTOS PLANT IN MARYLAND.

A company has just been organized known as the Baltimore Roofing and Asbestos Manufacturing Co., to erect a plant at Finksburg, Maryland, for the manufacture of various asbestos articles, including roofing and table cloths. The company has been capitalized at \$350,000, and includes business men of Baltimore, and Winchester, Maryland, and York, Pennsylvania. The plant will be under the management of O. R. Emigh, who was for some years general superintendent of the Central Roofing Mfg. Co., at East St. Louis, Illinois.

CLEANING METAL WITH A RUBBER ERASER.

A new use has been discovered for the ordinary rubber ink eraser, viz., the removal of tarnish from metal. It has been found that, except for very fine surfaces, where the grit in the rubber is liable to make slight scratches, the eraser is quite effective in restoring polish to soiled and discolored metals.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

TRADE NEWS NOTES.

The tire selling agency of The Hood Rubber Co., at Hartford, Connecticut, is now located at 30 Mulberry street, where a steam vulcanizing plant has been installed.

A Philadelphia branch has been established by the Pennsylvania Rubber Co. of Jeannette, Pennsylvania, at 651 North Broad street.

The Bowling Green Rubber Co., recently organized, and capitalized at \$25,000, will locate its plant at Bowling Green, Ohio, where it will manufacture, in addition to various rubber specialties, a line of rubber tire accessories.

Notice of dissolution has been filed at Madison, Wisconsin, by the Diamond Rubber Co. of New York, whose branch at Milwaukee was discontinued at the time that this company merged with the Goodrich.

The Motz Tire & Rubber Co. will hereafter be represented in Boston by The Columbia Tire & Top Co., of which Mr. R. J. Brine is manager.

The Syracuse Rubber Co. of Syracuse New York, has added to its sales force and also to its floor space, having recently leased a five-story building adjoining its present location, with the intention of utilizing both premises.

The agency for Miller tires in Cincinnati, Ohio, is now vested in The Miami Vulcanizing Co.

The Auto & Tire Sales Co. has been incorporated, with office at Wilmington, Delaware, to deal in auto accessories as well as automobiles. It has a capital stock of \$100,000, and the incorporators are E. D. Buck, G. W. Dillman and B. M. Gravel.

The Pennsylvania Rubber Co. of New York—a branch of the Jeannette, Pennsylvania, company of the same name—will soon open New York headquarters at Broadway and Sixty-third street. The main floor of the building at that location has been leased for this purpose and is now undergoing the necessary alterations.

The name "Motobestos" as applied to motor car brake band-lining and other asbestos-copper wire fabrics was allowed by the examiner of patents to The Asbestos & Rubber Works of America, after two years' litigation with the American Asbestos Co. over this trade mark as against the name "Motorbestos."

The Lee Tire & Rubber Co. of Conshohocken, Pennsylvania, is to open a department in New York City, at 1966 Broadway, to supply both the wholesale and retail trades of the city and vicinity as well as the New England territory.

A third story is to be added to the building now occupied by The Tucker Duck & Rubber Co. at Fort Smith, Arkansas. This will enable the company to add to its operating force and afford space for the installation of the necessary machinery for the increase of its output.

The Oshkosh Pneumatic Hub Co. has recently been organized at Oshkosh, Wisconsin, with a capital stock of \$20,000, to manufacture a new invention for automobile and motor truck wheels. The organizers are Fred E. Zuehlke, Frank Doemel and Joseph Laus, Jr.

The Electrical Exposition and Motor Show of 1913 will be held in the new Grand Central Palace, New York, from October 15 to the 25th.

A BRITISH GOODYEAR COMPANY.

Tourists can now obtain the same Goodyear service in Europe that is possible in America. A new company has been incorporated under the name of The Goodyear Tyre & Rubber Company, Great Britain, Limited, organized under British laws. This company will control all business with the exception of North and South America. The company's headquarters will be located at Central House, Kingsway, London, with agencies in Vienna, Copenhagen, Helsingfors, Berlin, The Hague, Christiania, Bucharest, Odessa, Stockholm, and Zurich; also at Cape Town and Johannesburg, South Africa.

NEW TRADE PUBLICATIONS.

A HANDSOME SOUVENIR PUBLICATION.

Telling their rubber machinery in suitable and attractive form to the attention of interested visitors to the Brazilian National Rubber Exposition, to be opened this month at Rio de Janeiro, the firm of David Bridge & Co., Castleton, Manchester, England, has prepared a handsome souvenir publication. In its 136 large pages they first describe and illustrate the successive steps in the gathering and preparation of rubber, the text being in Portuguese. The latter portion of the work is devoted to description and illustration of the machinery, tools, etc., they make for the use of rubber manufacturers. It is an interesting work, in every way worthy of the firm whose productions it represents and of whom copies may be obtained on request.

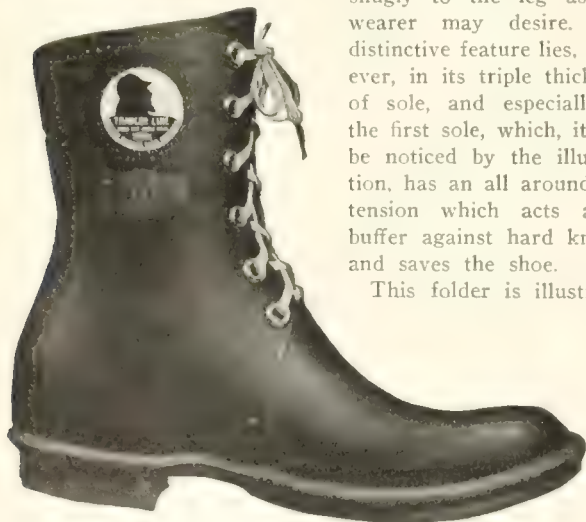
A NEW PRICE-LIST OF REAGENTS.

The importance of purity and standard strength in the reagents they use in their tests is fully realized by chemists and analysts, and is good and sufficient reason for the widespread demand for Merck's Standardized Reagents, supplied by Merck & Co., New York and St. Louis, and known from the style of their packaging as the "Blue Label Reagents." They have recently issued a revised price list of these goods for 1913, which will be forwarded on request to those interested.

A FOLDER ON A MINER'S BOOT.

The United States Rubber Co. has recently distributed a large eight-page folder descriptive of the "Hub-Mark" Miner's Trawler Bootee. This shoe is made of particularly strong duck, waterproofed by frictioning the rubber into the duck as the two go together through the calenders. For a shoe meant for heavy work it is comfortably light weight, and, being laced, fits as snugly to the leg as the wearer may desire. Its distinctive feature lies, however, in its triple thickness of sole, and especially in the first sole, which, it will be noticed by the illustration, has an all around extension which acts as a buffer against hard knocks and saves the shoe.

This folder is illustrated



by five large half tones, six inches square, made from photographs taken in the mines where the miners wearing "Hub-Mark" Bootees are at work in their various operations. One picture shows them digging out coal; another shows the driver with a loaded car; another shows the spragging of the car—that is, the stopping of the car with a piece of wood in the wheel on the down grade; a fourth shows the miner pushing coal down the chute with his foot, and the fifth shows him at that comfortable moment when he has arrived home after a hard day's work and is removing his bootees for footwear better suited to the upper walks of life.

This folder is intended for distribution among the miners and is printed in three languages, English, Hungarian and Polish. The illustrations should appeal to the miner with particular force, as they set forth so graphically the sort of life he leads under ground.

GOODRICH LITERATURE.

"The Goodrich" for August, being number 11 of Vol. 2, is an unusually interesting issue. Besides being devoted primarily to the advertisement of the B. F. Goodrich Co.'s specialties in tires, with illustrated descriptions of their manufacture and employment, it contains other matter of a general character of an excellence entitling it to special distinction as a high class house organ.

"TOP NOTCH" RUBBERS.

It is not only the compounding and curing of rubber which engage the attention of the maker of rubber footwear. Other points demand his care—such as construction, shapes and styles of lasts, and other elements of a well-made shoe. These demand special experience in the line itself.

It is to the possession of experience that the Beacon Falls Rubber Shoe Co., of Beacon Falls, Connecticut, attributes its success in the manufacture of rubber footwear. In a neat catalog of twenty-four pages and cover, recently issued by the company, it states that it has had sixty years of continuous experience in the manufacture of rubber footwear—which carries the company well back to the early beginnings of the rubber industry in this country.

The catalog has to do particularly with the "Top Notch" rubbers manufactured by the company, which it states cost more than other rubbers but are distinctive in style and appearance and therefore give the retailer something to talk about when offering these rubbers to his customers. Particular attention is called to some new lasts, among them the men's "English Flat Last," the woman's "Lopug" and a certain type of extension heel which the company calls the "Clincher Cushion." The catalog is illustrated by a great many wood cuts of the boots, lumbermen's arctics, overshoes, and tennis shoes made at the factory in Beacon Falls; and the prices are given in net figures so that the retailer knows just what everything is going to cost him.

IN BUSINESS 75 YEARS.

The firm of A. R. Underdown's Sons, 202 Market street, Philadelphia, has just issued a souvenir book of some 36 pages and cover, in celebration of its completion of 75 years continuous business life. The firm was established by Isaac Underdown on South Water street, Philadelphia, in 1838, for the purpose of dealing in oiled clothing. Later Mr. Underdown was joined by his son, A. R. Underdown, who became a member of the firm in 1863. Mr. A. R. Underdown retired from the concern in 1909, leaving his two sons, Howard and A. R. Underdown, Jr., to carry on the business. While the firm originally dealt only in oiled clothing, it later added a department of rubber goods and for many years past has made the wholesale distribution of those goods its principal work. This souvenir book is generously illustrated, but perhaps the most interesting pictures are the four photographic reproductions of the company's store—first, as it appeared in 1838; second, as it appeared in 1863; third, as it was from 1883 to 1909, and the fourth as it is today.

FACTS ABOUT FIRESTONE TIRES.

A neat pamphlet, distinctive in appearance and telling all about their tires, has just been published by the Firestone Tire & Rubber Co., Akron, O. With the aid of excellent illustrations it seeks to demonstrate the grounds on which the claims as to their superiority are based.

BELMONT PACKINGS

In a profusely illustrated catalog of nearly 200 pages, the various types of packing it makes for steam, water, ammonia, hydraulic, oil, gases, acids, etc., are described by the maker, the Clement-Keston Co. Philadelphia, Pa. In view of the importance of reliable packings in most mechanical equipments, it will doubtless be of interest to many of our readers.

THE ADVANTAGES OF BALATA BELTING.

The "Goodyear—A Family Newspaper," published by The Goodyear Tire and Rubber Co. of Akron, Ohio, contains a variety of articles on different phases of the manufacture of tires and mechanical rubber goods, written by the foremen of its different departments. This insures correct technical knowledge on the part of the writers. In a recent issue there is an article on balata belting by R. D. Burr, manager of the mechanical goods department of the company's Chicago branch, in which the following interesting paragraphs appear:

"In America, balata belt in reality is as yet but little known and little used, compared with either leather or rubber belts. Its construction makes it particularly adapted for transmission purposes, where the following conditions must be considered: 1st—High speed—small pulleys; 2nd—Heavy and uneven loads, suddenly applied and taken off; 3rd—Damp, wet conditions; 4th—Use of idlers; 5th—Minimum stretch.

"With these conditions in mind, on account of the extreme flexibility, great tensile strength, and the fact that the belt has a frictioned surface, insuring perfect pulley contact, we can recommend it for service over high-speed small pulleys.

"Equipment of this nature is found in saw and planing mills, paper mills and cement plants. In saw mills, one of the hardest machines with which the belt manufacturer must contend, is the edger. Belts required on this machine are usually from 35 to 50 feet in length and from 12 to 20 inches in width. The machine operating at a very high speed, ranges from five to seven thousand feet per minute, with pulleys of too small a diameter.

"In planing mills, there are the planers and sizers, both of which are operated at high speed over small pulleys and with heavy loads. On this machine, especially, the pulleys supplied are seldom large enough. This makes a belt of a sufficient number of plies to insure withstanding the strain of the load necessary. In the use of rubber belts, ply separation is the general complaint made by the user. When using this belting the number of plies must be sufficient to carry the load. With balata belting of a heavy, closely woven fabric, it is possible to use a belt of a less number of plies and still obtain at least the same results or probably better."

KOEBIG PACKINGS.

With such an essential mechanical requisite as steam packings, the user requires to be assured of the quality. In his recently issued catalog, P. W. Koebig tells the story of his various grades, commencing with the well-known "H P" or "Koebig" High Pressure Packing, intended for pressures exceeding 100 pounds.

The catalogue further describes and illustrates this maker's "Comal" square flax packing, and likewise his combination grades. Sheet packings are shown in various forms, while a full collection of valves and gaskets supplements the assortment. Full lists follow of steam and water hose, as well as of molded rubber factory sundries. In a paragraph on quality this statement appears: "If there were better packings I would sell them." To those interested Mr. Koebig offers the facility of catalogs in Spanish and Portuguese. [P. W. Koebig, 116 Broad street, New York.]

SIMPLEX STEAM SPECIALTIES.

"The Blow-off" is the title of a periodical booklet, now in its second year, distributed by the Yarnall-Waring Co., Philadelphia, Pa., in the interest of its specialties. The Simplex Seatless Blow-off Valve, "Lea" V Notch Recording Meter, Simplex Pipe Joint Clamp and Simplex-Caskey Hydraulic Valves, are the specialties to which it is particularly devoted, and descriptions and illustrations of which, with other interesting matter, make up the contents of its 16 attractive pages.

THE EDITOR'S BOOK TABLE

RUBBER PRODUCING COMPANIES, 1913. EDITED BY MR. B. Hyde Pearson. The Mining Lane Tea and Rubber Share Brokers' Association, London. Board covers, 8vo, 512 pp. Price 3 shillings.

THIS is a well-printed volume containing particulars in regard to the capital, securities, properties, production, prices obtained, etc., list of officers and directors, dividends paid, office, telegraph and telephone address, etc., of some 530 companies, having an issued capital of £52,477,000. The value of this publication consists in the accuracy as well as the completeness of the information it furnishes. Whenever possible the particulars have been obtained directly from the companies and are the latest available, while as addenda are lists of secretaries and directors. The companies other than those in the Far East are separately classified.

For those interested in rubber companies, either as investors or in any other respect, and as a review of the rubber producing interests of the world, the book is a valuable work of reference, while its excellent arrangement and typographical execution make its consultation a pleasure.

MOZAMBIQUE: ITS AGRICULTURAL DEVELOPMENT. R. N. Lyne, F.L.S., F.R.G.S., Late Director of Agriculture, Province of Mozambique. London: T. Fisher Unwin. [Cloth; 350 pp., with index, map and 16 illustrations.]

In his official position as Director of Agriculture of Mozambique, and with the experience obtained as incumbent of similar offices in Ceylon and in Zanzibar, the author has been able to present a remarkable picture of the importance to Mozambique of its agricultural interests. Treating at length of its natural advantages, he devotes separate chapters to each of its most important products, including rubber, both wild and cultivated.

Ceara rubber (*Manihot Glaziovii*) is the variety found best adapted to prevailing conditions in Mozambique, and Inhambane in the southern part of the province is reported as the chief center of experiment in its cultivation. The best results are obtained on the gray soil, and Captain Cardozo, late governor of Inhambane, an enthusiastic and successful rubber planter, conducted, in 1906, a series of experiments with four six year old trees which were tapped for 92 days, from January 7 to June 20. The average yield per tree was 290 grammes (10.15 ozs.), the average per tree, per day, 2.55 grammes, the product being fine, clear, tough rubber, with good nerve. The fact that the yield of latex showed a heavy increase the second season, indicates good wound response. *Manihot dichotoma* was also tried in the Quilimane district, but did not prove as satisfactory as the *glaziovii*.

While replete with valuable information, the book is notably readable and affords an excellent idea of the productive possibilities of this comparatively little-known land.

THE MERCHANTS' ASSOCIATION OF NEW YORK.

Founded to "foster the trade and welfare of New York," the above organization through its publicity bureau, has sent out its year book for 1913, which includes a list of the members of the organization classified according to their lines of business. It is an interesting publication, especially as showing the number of prominent firms who have organized for the laudable purpose for which the association was formed. An artistic engraving of the great Woolworth building, in which the association has its headquarters, forms the frontispiece to the year book.

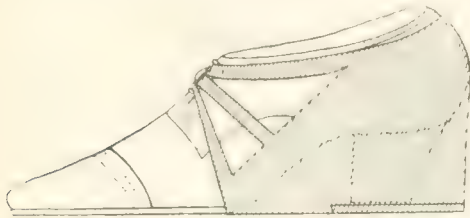
VALUABLE INFORMATION IN CONCISE FORM.

Two pamphlets recently issued by the National Fire Protection Association, New York, will be found to contain a fund of useful information for manufacturers and others. They are "Suggestions for Protection Against Lightning" and "Rules and Requirements for Electric Lighting," both prepared by the National Board of Fire Underwriters, and covering all that should be known on these important subjects.

New Rubber Goods in the Market.

RUBBERS THAT PROTECT THE GROUND.

HIGH-HEELED rubber overshoes have been worn for the purpose of protecting the feet against outside conditions, but here is an illustration of a rubber overshoe—or at least a partial overshoe—intended to protect outside conditions from the feet. This is a rubber covering that fits over the heel and comes forward to the ball of the foot, the space under the arch of



the shoe being filled in with some material. It is fastened on the foot by three straps going over the instep. When this rubber is put over the

shoe the most high-heeled pattern affected by any woman is converted at once into a perfectly flat-footed surface, the intention being to wear this rubber shoe in playing croquet, and possibly tennis, or other outdoor games where high heels with very narrow bottoms are liable to cut up the ground. This, by the way, is the invention of a citizen of Surrey, England. To be sure, most people intending to engage in outdoor sports would get a pair of rubber soled shoes made especially for that purpose, but if any woman is so devoted to her high heels that she cannot be parted from them, here is a device that will enable her to retain them and still operate on tennis and croquet courts without injury to the grounds.

A COOL BITE FOR JUVENILE BITERS.

PERHAPS the best treatment a small child is doing something for his comfort and peace of mind continually. The latest embodiment of this thoughtfulness for the youngster is to be found in the "Koolbite Teething Toy" which is herewith illustrated. While this is called a toy, it is a toy with a serious purpose. The accompanying picture shows what a winsome face this device has been given, which ought to appeal at once to the infantile mind—and particularly that long rubber nose, which every well disposed baby will insist upon biting forthwith.



THE KOOLBITE TEETHING TOY.

But that humorous visage masks the maker's real purpose. It will be noticed that there is a ring around the center of this article, dividing the face from the back of the head. The device at this central point can be taken apart, when it will be discovered that it contains a small aluminum receptacle which also can be taken apart and filled with cracked ice. When put together it is water tight, and no ice nor water can get out any-

where; but they serve to cool the elongated nose on which the child bites, and in this way the superheated gums of young people engaged in the interesting occupation of teething are cooled and relieved of their inflammation. Its entire weight is only 1¼ ounces. It is 4 inches long and 2¼ inches in diameter, so in neither size nor weight is it any great strain on the youngster's strength. (Koolbite Company, Inc., 96 Broadway, New York.)

A FINGER TOOTH BRUSH.

Here is an illustration of a tooth brush intended to be worn on the finger—invented by an Englishman who evidently thought that the saving of space was a prime consideration; for the advantage of this brush over others is simply that it does away with the handle and substitutes the human finger in its place. The brush itself is made of bristles fastened into a base of celluloid, hard rubber or water-proofed leather, as the case may

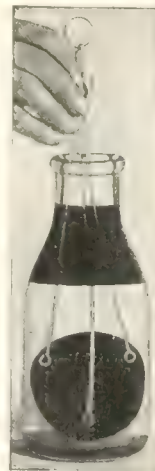


be. This base is cemented on a flexible cot or sheath made of rubberized fabric with a soft rubber tip. A button is provided at the mouth of this sheath to make it more secure when on the finger. The illustration gives an adequate idea of this highly important invention.

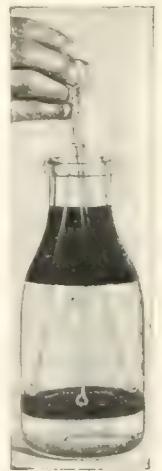
A RUBBER DISC TO LIFT OFF THE CREAM.

It is sometimes desirable to separate the cream from the milk in the bottle which the milk-man leaves at the door in the morning. Here is a very simple device for accomplishing that

end. It consists of a flexible rubber disc to which three long aluminum wire handles are attached, and they are so arranged that the disc can be dropped down through the cream edgewise, as shown in the first illustration, and then brought up under the cream flat, as shown in illustration No. 2. The disc just fits the bottle at the point where the cream should normally rest on the milk. With the wire handles the disc is then drawn up, and, being flexible, continues to fit the neck of the bottle as it grows smaller, thus lifting all the cream and leaving the milk. Where the milk is not up to standard quality there will naturally be a little



DISC GOING DOWN.



DISC COMING UP.

milk with the cream; and if the milk is above standard quality—but this never happens. [Hamlin & Russell Mfg. Co., Worcester, Massachusetts.]

CEMENTING WALLS WITH RUBBER HOSE.

Rubber hose can hardly be classified under new goods, but here appears to be a new use to which rubber hose has recently been put. The custodians of St. Paul's Cathedral in London have been very much disturbed of late by the cracks appearing between some of the big stones of that structure, and they have finally devised a way of filling these up and making the walls as solid as ever. They filled the cracks with cement by means of a rubber hose attached to the proper machinery, which, by the use of compressed air, drives the cement into the remotest corners and knits the stone solidly together.

NEW RUBBER CAPS AND COATS FOR FALL.

If there remain any adherents of the old belief that an article of special attractiveness must necessarily be lacking in genuine merit, they have only to visit the departments in certain of our New York stores devoted to the latest in waterproof garments for fall to be convinced that the beliefs of our ancestors, like the raiment of their day, must undergo a painful process of remodeling before becoming suitable for present-day use; for in these departments it would seem that the fashion is not



FIG. 1 LADIES' RUBBER CAPS.

been exercised, both in design and manufacture. Photographs of some especially attractive models are reproduced herewith.

In illustration No. 1 we have ladies' caps, the one made of rubberized poplin, and the other of waterproofed serge, for use on stormy days or as auto or driving caps to protect the hair from wind and dust—each so fascinating in appearance as not only to add to the appeal or charm of a pretty or handsome face, but even—by directing to itself unusual attention—capable of performing the much more difficult feat of securing for the



FIG. 2 CRAVENETTED RIDING HABITS AND SPORT SUIT.

wearer forgiveness, for the time, for the crime of homeliness.

Coats in materials similar to these caps, in loose-fitting and adjustable-belt styles, are also prominently displayed, the most noticeable difference between these and the summer models

described in our June number being that of weight of material employed. But the line of raincoats for general wear as regularly carried in retailers' stocks has been supplemented this season by an assortment of waterproof riding habits and sport coats, unusually appealing in design, embodying all the distinctive and attractive features of the most advanced styles. Figure 2 gives an excellent idea of three of these latest offerings. The habit illustrated is of cravenetted English melton, and may be had in oxford, blue, brown or black, with satin-lined coat, rubber faced, safety side or new divided skirt and breeches to match, in ladies' or misses' sizes. The little girl's coat and breeches as pictured are shown in one store in sizes as small as



FIG. 3 BOY'S RUBBER CAP AND COAT.

five years. They are of cravenetted English habit material, in brown, gray or oxford, and of black and white checked worsted, the coat satin-lined and rubber-faced, and the breeches with buckskin-reinforced chamois seat. The sport suit is shown in misses' sizes only, in tan, brown or taupe cravenetted corduroy or of tan or brown cravenetted khaki. The coat of this suit has a semi-belted back and reinforced shoulders, and the shell skirt is open front and back.

Illustration No. 3 shows a boy's storm cap, with hood and cape effect, affording absolute protection to the head and neck. This cap is of rubber, made with cemented seams, in black only, and, in view of the service it is bound to render and the joy such a cap affords the little chap, is remarkably moderate in price. He might, however, be a young man of strong individual preferences and declare in favor of a rubber hat, which leaves his neck free (to be protected while actually out in the rain by the storm collar of his coat) and which is designed to shed the rain away from his head and on to his shoulders. Illustration No. 4 shows such a hat, with the necessary raincoat accompaniment. This coat is of double texture, has two side pockets, cemented seams and a vent at the center back seam which may be fastened with a button and button-hole—following in every respect the style of the men's raincoat. The little lad who starts off for school in his outfit of rubber hat or storm cap, raincoat and rubber boots, causes his parents no uneasiness due to the thought that he lacks the proper equipment of outer clothing.



FIG. 4. BOY'S RUBBER COAT AND HAT.

For those who must be out in all kinds of weather, garments which will protect the person as well as the perishable attire of the wearer are sensible and practical investments, and the

described and illustrated models are so designed as to combine service and style effect at very low cost; while for those who dislike to be deprived of their morning ride or tramp, outfits as here mentioned, which afford warmth and protection from the rain and at the same time justify no adverse criticism as to fashionable construction, will be welcome wardrobe additions.

RAINCOATS FOR DOLLS.

In addition to supplying rubber garments and caps and hats for actual people in real life, some manufacturers have provided comprehensive lines of rubberized garments for the doll family. The Stern Specialty Co., of New York, London and other places, for instance, carries fifteen different styles of rubberized coats and cloaks for small people made of china and wax. These garments are made both in silk and cotton. The accompanying illustration shows a handsome young doll all ready for an automobile ride, in her rubberized coat and a pair of goggles.



It has not yet come to the notice of the editor of this column whether a full line of mackintoshes has been made for the dog family, but it is not an unusual sight in inclement weather to see bulldogs and other dogs of high degree moving decorously along the city avenues protected by rubber blankets, lined with wool to keep the animal warm while the rubber keeps him dry.

RESULTS OF VARIOUS COAGULANTS

COAGULATION has been defined as the formation of liquid latex into a mass, thus giving birth to a substance of extremely "nervy" and elastic character.

As M. G. Vernet remarks, in the "Revue Internationale," two principal theories have been propounded with respect to this process. On the one hand, it has been maintained that the thickening of the latex is only caused by the coagulation of the albuminoids, in the same way as globules of blood are agglutinated by the coagulation of the albumen present.

M. Victor Henri, on the other hand, entirely rejects this view. Assimilating the coagulation of latex with the precipitation of colloids, he considers that it is chiefly produced under the influence of electrolytic agents; that is to say, of salts, acids and compounds acting in that way.

In M. Vernet's opinion, the views of M. Henri are likely to make rapid progress among students of coagulation. They lead him to believe that the best qualities of rubber can be obtained by the use of salts and acids as electrolytic agents. He considers, however, that coagulation may be induced at the same time or separately by various other factors, which he treats in detail as follows:

DESSICATION.

The dessication, or evaporation of the water of the latex, causes the formation of a dry extract; but this dry extract has no longer the property of being completely soluble in water, so as to again form the original latex. The globules of rubber, in particular, are agglomerated, and it can thus be said that coagulation takes place by reason of the progressive approximation of the globules.

In practice, this method of coagulation is not willingly used in the case of *Hevea* latex, more or less diluted with water, and reaching the factory in a liquid state. This operation would be too expensive for the rapid cold evaporation of all the water contained in the latex.

HEAT.

Heat induces coagulation of latex only in an acid medium.

In a neutral or alkaline medium, the boiling does not lead to the combination of the rubber globules, nor to the coagulation of the albuminoids in the latex; but, if the liquid is acidified, coagulation takes place. The more acid the latex is, the less need is there to raise the temperature to produce its coagulation.

Notwithstanding what may have been said, pure latex is always acid even at the time of flowing from the tree, and it may thus be directly coagulated by heat. It thickens at 65 degs. C. (149 degs. F.) and coagulates at 70 degs. C. (158 degs. F.). This system is, however, but little used.

SALTS.

It may be said that at the present time salts are not used for producing the coagulation of *Hevea* latex, trials made in Java and Ceylon having been unsatisfactory. It has been found that the quantity of the reagents which requires to be used with salts exceeds the weight of organic acids needed for the coagulation of the latex.

M. Henri has brought forward this question again, urging that double and triple salts of metals are excellent coagulants of rubber. He specially mentions salts of calcium, magnesium, zinc, lead and aluminium, which, in an acid medium, produce an electrolytic effect on the grouping of the globules.

Difficulties have attended the use of salts without the addition of acid to the latex to produce coagulation, but M. Vernet considers it possible that the judicious choice of reagents, and the extent to which they are used with ordinary latex not freed from acid, may lead to very satisfactory results.

ACIDS.

It was at first thought that the action of acids upon coagulation was only due to the insolubility of the albuminoids, containing the globules of rubber. M. Henri has since shown that with latex freed from its salts or crystalloids, acids do not produce complete coagulation, but only the agglutination of the rubber. In ordinary *Hevea* latex all acids produce coagulation, but the proportions of organic acids needed for that result are larger than is the case with mineral acids. The former are, however, preferred, on account of the corrosive action of the latter (such as that of sulphuric acid, hydrochloric acid, or azotic acid) upon the impurities which remain in the mass, as well as upon the metallic portions of the plantation factory plants.

USE OF SALTS AND ACIDS TOGETHER.

Finally, M. Vernet advocates the combined use in coagulation of salts and acids. To use his own words, "Like salts, acids employed alone do not produce good results, but remarkable effects can be obtained by the simultaneous use of both."

INDIA WANTS AMERICAN ASBESTOS.

The United States consul at one of the large centers in India sends in the following information (Consular report No. 11,457) regarding the demand in that country for American made asbestos sheets:

"A business firm in India would like to ascertain if any American firms make corrugated asbestos sheets for roofing. This firm knows at present of these sheets being made only in Canada, and would like to secure competitive quotations if possible from the United States and act as agent for any American concern which may turn out a reliable and low-priced article. It is thought that India presents a good field for corrugated asbestos sheets for roofing, as these would prove cool and light for the hot Indian climate."

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

RAW MATERIAL AND THE TRADE.

ALTHO trade generally is reported as good—except in the waterproof branch, affected by the dry summer and the poor colonial demand—there has been no exceptional briskness. Continued weakness in raw material has had the effect of inducing large contractors to defer placing their contracts, in the hope of getting still better terms. The very informative summary of the prospects of raw rubber during the next few years, by Mr. Malet, in the Straits papers, "Financier," etc., has been read with interest by manufacturers. Among the comments I have heard are many expressing the opinion that Mr. Malet has somewhat underestimated the probable output from the plantation industry. With reference to limiting the output on the lines of the American copper producers, this is regarded as an unworkable proposition, as the running costs will remain practically the same. The rubber, manufacturers say, will all have to come on the market for the best price it will fetch, which, of course, will suit their book and accentuate the present policy of buying from hand to mouth. This expression may be taken as referring to covering requirements for about three months ahead, not three days, as some purchasers of rubber goods seem to imagine when they ask for a reduction in price the day after reading in the paper that a slight fall has occurred in the raw material.

This matter of reduction in price of goods is much to the fore at the time of writing. During the last few months the manufacturers have undoubtedly been getting a bit of their own back, but the general revision of price lists is a matter which can hardly be further delayed. At the same time buyers of rubber goods are apt to overlook the fact that the price of raw rubber is only one factor in the position. Manufacturing costs generally are higher than they were; cotton is up, and many chemicals—notably litharge—have risen in price.

RECLAIMED RUBBER.

The world's consumption of rubber having increased considerably in the last few years, it goes without saying that there is more raw material available for the reclaimers, who keep busily employed despite the great drop in price of raw rubber. An important occurrence of the past summer has been the falling in of the Marks alkali patent, worked by the North Western Rubber Co., at Liverpool. The other alkali patent—that of Price, worked by The Rubber Regenerating Co., Limited, at Trafford Park, Manchester—has still some years to run, and it will be remembered that two years ago a working arrangement between the two companies as regards their patents was agreed upon. The Trafford Park Co. is again enlarging its works, to cope with increasing trade; and it has recently been announced that the Xylos Rubber Co.—also an American undertaking—has acquired between two and three acres for new works for regenerating rubber. The Xylos Rubber Co. is connected with the Firestone Tire & Rubber Co. As an American company cannot hold land in Trafford Park, an English company has been registered, one of the directors being Mr. Marshall Stevens, the managing director of the Trafford Park Estates Co., Limited.

I understand that the Mersey Reclaiming Co., whose works at Stockport were burnt out in the spring, has decided not to recommence business.

A new works, the Pomona Rubber Co., Limited, of City Road, Manchester, is putting on the market reclaimed rubber made by a new process.

If we take into account G. H. Scott & Co., Anderson & Co., The British Recovered Rubber Co., Hallas & Co., and Alfred Smith, it will be seen that the Manchester district is an important

center for the production of reclaimed rubbers. With regard to the price of waste rubber, the reclaimers raw material, it is noteworthy that prices do not rise and fall in sympathy with the raw rubber market, changes of moment in values taking some time to mature; and it is therefore not to be expected that reclaimers can make weekly or monthly alterations in their price lists.

I have not seen any of the "Fish rubber" which, I understand, is being made in Holland, but have had inquiries on the subject from fishing ports in England, as to whether there is money in it. My own opinion on the project is supported by the dictum of the Henriques Laboratory of Berlin—that it is worthless.

MR. J. CARTER BELL.

Mr. J. Carter Bell, a well-known public analyst, died recently at Manchester, after a somewhat lengthy period of ill-health. Thirty years ago—before rubber chemists were as common as they are now—he specialized to some extent in rubber analysis, and in more than one legal case gave evidence in opposition to Dr. Burghardt, the other Manchester rubber analyst of the day. It was this association which led to his son, Mr. P. Carter Bell, becoming connected with rubber, first in England and subsequently in New York, where his business in substitutes, etc., has for many years been brought before the readers of the INDIA RUBBER WORLD through the medium of the advertising pages.

MR. H. P. MOORHOUSE.

Mr. H. P. Moorhouse, who died recently, was an American who had long been settled in Paris as the representative of the Revere Rubber Co. and the Philadelphia Rubber Works. It was in the elastic thread trade that he was perhaps best known, certainly in England, where he made frequent visits to Leicester, the headquarters of the elastic fabric industry, to superintend the business carried on there by a resident agent. In 1906 I had the pleasure of meeting Mr. Moorhouse in Paris and heard from him that he imported the first lot of reclaimed rubber that was sent from America. This Mitchell rubber, as it was then called, was used in the manufacture of steamship valves. It is understood that the thread business of the Revere Company will be carried on by Mons. J. Clerc, Mr. Moorhouse's assistant, at the old address, while the reclaimed rubber business will be done by the Philadelphia Co. at an office of its own at No. 29 Rue des Petites Ecuries.

ADMIRALTY CONTRACTS.

Questions having been asked in Parliament as to why Brazilian rubber was stipulated for, the secretary to the Admiralty replied that this stipulation had been removed in 1907, the best rubber only being mentioned. It was further said that Fine Hard Pará was only mentioned in connection with one or two small items. As some interest has been evinced as to what these items are, I may say that in the latest Admiralty specifications Fine Hard Pará is only required for electrical tape; therefore the plaints of the plantation magnates have no foundation, or at any rate, but very little.

LAMP BLACK.

I have read the digest of Mr. Cabot's paper as given in the INDIA RUBBER WORLD for August with interest. The nomenclature of blacks as used in the rubber trade has always been in a state of confusion, different dealers using the terms—"lamp," "carbon," "vegetable," etc., without any particular reference to their origin. The American carbon black of high coloring power has now largely ousted the various blacks of highly differing coloring power which were sold to the British rubber trade 20

or 30 years ago, tho of course the price is much greater than in the case of inferior brands, such as mixtures of lamp black and whiting. The term "vegetable black" was not used by Mr. Cabot. In England this refers either to lamp black produced from burning heavy oil or to finely powdered charcoal made in stills. At one time large quantities of this latter material were sold to the rubber trade, its comparatively low price being a desideratum. Its main drawback was its liability to spontaneous combustion, this having occurred several times in my own experience. Such occurrences were no doubt due to faulty manufacture and may be considered therefore as preventable.

IMPROVING INTERIOR GRADE RUBBERS

An interesting patent has been taken out by Doctors Spence and Russell and the Diamond Rubber Co., for the above purpose. By mere admixture of metallic sodium or powdered caustic soda with low-grade rubbers, and the subsequent washing out of the alkali, they claim to convert the rubber to a much higher grade. The eminence of the patentees is a guarantee that there is something in the idea, which cannot be said of the bulk of rubber patents. Of course, authorities are predicting the disappearance of low-grade rubbers from the market in the course of a year or two, so that this patent, if successful, may have but little application. Up to now it has been held that caustic soda at a moderate temperature has no action on rubber, and it will be interesting to hear more about the hard, tenacious body produced by merely mixing caustic soda with the rubber on the rolls. Is the change merely a conversion of the resins into hard soaps or does the rubber itself undergo any modification? *Prima facie* resin soaps, if they are formed, do not appear to be highly desirable components of rubber mixing. A good many years ago the use of metallic stearates and oleates was proposed in rubber mixing, but nothing satisfactory resulted. The invention, it is stated, is applicable also to waste or oxidized rubber, especially that which is produced by devulcanizing operations; so that we may have here the germ of an improved rubber reclaiming process. Interest now centres mainly upon how goods manufactured from the improved rubber stand the tests of wear and time.

THE GORTON RUBBER COMPANY.

I regret to say that this company, owning the Gorton & Droylsden rubber works, has not been able to recover from the heavy loss incurred two years ago, things having indeed gone from bad to worse. The present position is that on the application of the debenture holders the court has appointed a receiver who is now in control of the business. Under the law the receiver can either carry on the business or realize on the assets on behalf of the debenture holders. Should this latter alternative come to pass it will be by no means the first case in the Manchester district where a small works has gone under in recent years owing to the lack of sufficient resources to weather a period of depression. At a meeting of the shareholders the somewhat pertinent query was put as to the directors' knowledge of the rubber trade. This is a delicate matter, into which I shall not enter, tho I cannot forbear from remarking how very common it is in British limited companies to choose directors from men of wealth and position quite irrespective of any special or even general knowledge they may have of the business whose destinies they are to control.

SYMINGTON & SINCLAIR.

A new firm of rubber and general produce brokers commenced business in London on September 1 at 17 Mincing Lane, under the firm name of Symington & Sinclair. It is the intention of the new concern to confine its operations exclusively to the London market, where both members are well known, Mr. Symington having been engaged in the rubber trade for more than seventeen years and Mr. Sinclair for the past fourteen years.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

TRADE NOTES.

The European warehouse of the Revere Rubber Co. removed on September 1 to its new location at Woodbridge Road, Melton Road, Leicester, England, where, with enlarged space and improved equipment, it will be enabled to more advantageously take care of orders from its extensive territory.

A new agency has been established by The Victor Tyre Co., Ltd., in the West End of London, offices and stock rooms having been opened at 15, Carteret street, Westminster, S. W., near Buckingham Gate, where proper facilities are available for the fitting of tires to customers' cars, and where all the clerical work of the company is to have attention.

Prince Henry XXXII of Reuss, Germany, is president of the Mauga-Marimba Gesellschaft, a corporation formed to engage in the cultivation of rubber on plantations purchased by the Prince in German East Africa. According to current reports, the venture has not proved successful and other products are to partly replace the rubber.

The official commercial registration of the firm "Deutsche B. F. Goodrich," is recorded at Frankfort-on-the-Main. The firm is registered as manufacturing and dealing in rubber goods of every description, automobiles, bicycles and motorcycles of all kinds, especially goods bearing the trade marks "B. F. Goodrich," and "B. F. Goodrich tires." The new firm takes over the Frankfort branch of the company's French house. The business manager is Arthur Ernest Lumsden, of Colombes, Department of Seine, France.

The firm of Peter Rost is reported recently established at Franzstrasse 52a, Köln-Lindenthal, Germany. It will deal in rubber goods of all kinds, making a specialty of aviation equipment and everything connected with air craft.

A new pneumatic tire factory has been established at Budapest, Hungary. It bears the title "Fox Pneumatic Co." and has a capital stock of 500,000 crowns (\$101,500).

The Helsingborgs Gummifabriks-Galoscher Aktien-Gesellschaft Tre Torn, has been commercially registered at Berlin, Germany, to manufacture rubber goods, with a capital of \$100,000 marks (\$23,800).

Italy's imports of rubber for the year 1911, according to statistics recently published, amounted in value to 64,319 lire (\$12,413). Of this amount raw rubber and gutta percha and rubber and gutta percha wastes, made up 30,625 lire (\$5,919.6). The figures show a material advance as compared with the preceding year.

A recent issue of the *Bulletin de l'Association des Planteurs de Caoutchouc a Anvers* (Bulletin of the Antwerp Association of Rubber Planters) announced the formation of a stock company, *Plantations Annamites*, with a capital of 1,250,000 francs (\$241,250), for the establishment and exploitation of various cultures, particularly in the countries of the Far East, including Indo-China. The promoter is probably M. Adrien Hallet, to whom has been allotted 2,500 founder's shares.

A STRIKING DECREASE IN MOTOR TIRE EXPENSE.

One of the English papers, speaking of the development of the rubber tire in truck service, makes the statement that the first set of rubber tires to be used on a modern commercial motor-van in that country was tried in the Liverpool-Manchester mail service in the year 1902, and the cost of those first tires was shown by careful computation to range from 10d to 1s 3d per mile, while the second year the cost had been reduced to about one-third of this amount. Some of the large department stores in London which use a great many of these motor-vans have reduced the tire cost to 1/4d per mile, which is about one-twentieth of the cost during the first year of trial, eleven years ago.

IMPORTS OF CRUDE RUBBER INTO GERMANY.

Germany's imports of crude rubber amounted during the first half of 1913, in round figures, to 9,464 tons, about the same as for the corresponding period of the preceding year. The value was 83,700,000 marks (\$19,920,600). As to the source of supply a slight tendency in favor of Brazil is to be recorded. The latter country still ranks first with some 2,678 tons; but as compared with other supplying countries it has not by any means the advantage it formerly enjoyed. Compared with the first half-year of 1912, imports into Germany from Brazil fell off to the extent of 892 tons. Imports from Mexico, previously second in importance, show a considerable decline, 330 tons against 9,642 tons for the same period last year. On the other hand, imports from the British East Indies have greatly increased, occupying second place with 1,919 tons, compared with 598 tons for the same period last year. The German colonies furnished 1,205 tons, about the same quantity as during the first half of last year. The figures indicate a heavy decline in the use of Mexican guayule, which sprang into favor during the period of high rubber prices and a material increase in the demand for East Indian plantation rubber.

GERMAN RUBBER TRADE STATISTICS.

From a recently published report of the Imperial Statistical Bureau of Germany some interesting information is obtainable in regard to the rubber manufacturing industry in that country. The report deals with the status of industrial corporations, and this year, for the first time, the rubber industry has an independent classification, having previously been included with the leather manufacturing interests.

The report shows the existence, on June 30, 1912, of 33 companies engaged in rubber manufacturing, with a share capital of 83.7 million marks (\$19,920,600). Of these, 24, with a capital of 63.1 million marks (\$15,017,800), proved remunerative, their profits for the year July 1, 1911, to June 30, 1912, amounting to 14 million marks (\$3,332,000). If we consider the average interest earnings of the capital employed in the rubber industry, we find that it amounts to 8.39 per cent. for the period in question. The nine concerns that operated at a loss employed capital amounting to 19 million marks (\$4,522,000), and booked a deficit of 5.4 million marks (\$1,285,200); so that while the business proved to some concerns quite remunerative there was nothing extraordinary in the profits recorded by the industry as a whole, more especially as the capital would have to be turned over several times to make the profit average recorded, which would mean a considerable reduction in the net gains.

A PRIZE FOR THE BEST PLAN FOR A RUBBER FACTORY.

The publishers of "Gummi Zeitung," the rubber paper of Berlin, offer a prize of a "silver vase valued at £25" for the best design for a factory for the manufacture of rubber goods. The competition is open to anyone in any country, and the title remains the property of the competitor, altho the right of reproduction is reserved by the publishers of the "Gummi Zeitung." The plans must be sent in before the fourteenth of next May, to the Awards Committee, in care of A. Staines Manders, 75, Chancery Lane, London, W. C., and the award will be made during the London rubber exposition in June of that year. Anybody who is desirous of entering this interesting contest can write to Mr. Manders for specifications and for an entrance blank.

NO MORE STEEL TIRED TRUCKS IN PARIS.

Beginning with the fifteenth of the present month, commercial vehicles with steel tired wheels will be barred from the streets of Paris. All commercial vehicles must have rubber tires. The same law has been passed in Germany, covering the larger cities. It has been found necessary to take this action because the steel tires not only cause a disagreeable vibration when going through the streets, but—which is even more serious—have been found to cut up the pavements very badly.

THE ORIGINATOR OF "TUCK'S PACKINGS."

EVERY one in the mechanical rubber goods trade is familiar with the goods known as Tuck's packings. They are staple goods made by scores of factories but few probably know their beginnings. This packing takes its name from an American named Tuck, who, like all inventors, was very much of a character. Of his many inventions, the packing that bears his name is the only permanent reminder of him. There is, however, on London docks a tradition of a huge metal diving bell which he built that had a new type of inlet valve, a special pet of the inventor. To demonstrate its efficiency, he and some of his friends got into the bell and went to the bottom of the Thames one day and while Mr. Tuck was explaining the excellent qualities of the valve it stopped work and all of them nearly lost their lives. His packing, however, was as successful as the diving bell was unsuccessful, and in 1850 he started a little factory at Lambeth on the Thames. This business prospered and he was connected with it until his death.

In 1864 George William Taylor entered the firm. He came from an old English family, who placed him in a large importing house to learn the business. The line was not to his liking and he ran away and started in to learn the rubber business. Soon he became a stockholder in the Tuck concern and as it prospered induced his brother Edward to come with him.

In 1882 they built an entirely new factory near the site of Tuck's original buildings. Both of the brothers had a strong mechanical bent and were able to make almost any kind of machine that they needed. For example, when the first dynamos appeared and were very costly and unreliable, they built one of their own which is still running and doing excellent work. Then those two men, with only the assistance of a trusty laborer and some differential pulleys, set up and started in operation the heavy special machinery at their Cardiff factory, thus keeping its existence secret.

Not only was this company a pioneer in packings, but its managers have constantly increased their output and are very proud of the fact that the quality of their goods has never been changed. They have branches for the marketing of their goods all over England and Ireland, and agencies all over the world.

EUROPEAN RUBBER SYNDICATES?

ACCORDING to European advices, steps are being taken in various countries to promote the sale of plantation rubber. In Paris, a committee of twenty is said to have been formed to protect the interests of producers, on the basis of a limit of price of 3s or 3s 2d per pound, with standard prices for the three chief grades of plantation rubber. It is said to be proposed, moreover, to invite the co-operation of the producing companies, with the view of raising a capital of \$100,000 to establish a central institute for studying the more extensive use of plantation rubber.

The idea would seem to have been taken up by other countries. One report from Antwerp says that the Belgian government is trying to form an international rubber syndicate. It is further stated that the Dutch government would form part of the organization, which would have a capital equalling \$12,000,000 to \$20,000,000.

The Belgian government is reported to have been in communication with the Brazilian administration as to the formation of this International Syndicate.

In reproducing this report under all reserve, the "Gummi-Zeitung" remarks:

"This means the monopoly of the entire rubber production and by reducing output to re-establish the previous high prices. We are very skeptical on the subject. The work of uniting the various plantations and bringing them to act together is a task the projectors imagine to be easier than it is."

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

HIS Excellency the Governor (Sir Walter Egerton, K. C. M. G.) has departed upon a long delayed journey through the interior of the colony to the Rupununi District on the Brazilian boundary, the object of which is to prospect and survey the land for the purpose of ascertaining its suitability or otherwise for the building of a railway from Georgetown to Brazil.

His Excellency is accompanied by Captain Napier, *aide de camp*; Mr. C. W. Anderson, forestry officer; Mr. G. M. Bland, an engineer from England, specially engaged by the Government for this survey, and Dr. Wise. The party left Georgetown on September 2 and will travel down the Rupununi Valley, calling at Mr. Melville's station and afterward proceeding to the Brazilian frontier. After visiting the whole of the neighborhood of the Takutu and lower Ireng Rivers, His Excellency, Dr. Wise and Captain Napier will return by the same route, Messrs. Bland and Anderson returning by way of Kaieteur. The trip is expected to last about sixty days and to do much toward revealing the possibilities of the far interior, which are at present but little known apart from what has been discovered by the prospectors of the balata companies and a few others who have from time to time penetrated the bush.

Professor Harrison, Director of Agriculture, and Mr. F. A. Stockdale, Assistant Director, have just published an interesting report showing the progress of the cultivation of rubber in this colony. It appears that there are now 2,250 acres under rubber cultivation, out of which it is estimated fully 1,700 are planted with Pará rubber. This is but a beginning, says the report, as there are fully 9,000,000 acres of easily accessible lands—much of which is suitable for rubber cultivation—that are unalienated from the Crown, and which can be leased from the Government on very liberal terms. Acreage returns collected by the Board of Agriculture are given, indicating the progress of rubber planting in the colony, as follows: 1907-8, 416 acres; 1908-9, 556 acres; 1909-10, 995 acres; 1910-11, 1,740 acres; 1911-12, 2,250 acres. A considerable portion of the report is devoted to the results of the trials at the various experiment stations. "At the Botanic Gardens, Georgetown, experiments in the growing of *Hevea Brasiliensis* were conducted in the shelter belt, in the friable soils of the nursery, in the very heavy soils in the Brichtdam field, and on the eastern side of the rice experimental field where the conditions closely resemble those of the abandoned sugar cane fields of the coastal region of the colony. The growth in all these situations has been far from satisfactory. The effect of wind upon Pará rubber trees has been clearly demonstrated, and it has been ascertained that the constant sea breezes that sweep throughout the year across the coastal lands of the colony retard their growth to a very marked degree. Spells of dry weather, which usually occur in this part of the colony about twice a year, have resulted in 'wintering' of the trees, and this has further tended to retard their growth." The report proceeds: "From these experiments it has been clearly demonstrated that the heavy clay soils of the coastal region, formerly cultivated in sugar-cane, are not suited for the successful cultivation of Pará rubber, and numerous observations on the trials carried on by the sugar estates on such lands fully confirm the conclusions drawn from the above experiments." It appears that not only *Hevea Brasiliensis*, but *Sapium*, *Castilloa* and a few other varieties have been found to be unsuitable for planting on the heavy, wind-swept coastal lands. "The yields obtained from these trees were not very good and the rubber had to be collected almost entirely as scrap." The results of the experiments at the Onderneeming station, which have been considerably extended, have been slightly better. "Pará rubber, *Sapium Jenmani*, *S. Cladogyne*, *Castilloa Elastica* and *Funtumia Elastica* have

been experimented with. The growth of the Pará rubber has been generally satisfactory, and over 20 acres are now planted, mainly as an inter-crop with coffee. *Sapium Jenmani* has done fairly well on some soils, while *Castilloa Elastica* has generally made unfavorable growth. *Funtumia Elastica* is healthy and the majority of the plants are making fair growth. There are over 200 trees of *Funtumia Elastica* at this station and some of them have been tapped. The yields were poor, but the product obtained was of excellent quality. The trees that have been tapped continue to make satisfactory progress, and several more trees have reached a size at which they can be tapped." As regards the experiments at Christianburg, Demerara River, the early growth of Pará rubber on the heavier and on the lighter soils was satisfactory, but on the lighter sandy soils the rate of growth has steadily fallen off. The growth of the *Sapiums* on the light soil has been very unsatisfactory and their culture will be discontinued except on the heavier types of soils. In 1910 and 1911 an area of slightly over five acres was planted with Pará rubber on the compact, alluvial clay land of the river bank. This soil is totally different in physical and chemical properties from other soils experimented on, but it is typical of a large area of land in this and other districts. The drainage of the land has received careful attention and the young plants are making satisfactory growth. This soil also appears to be suited to the growth of *Sapium Jenmani*, as the few trees growing on it have made promising growth." At the Issorora station, Aruka River, the results were poor, altho some of the *Hevea* trees are making better progress than they formerly did. At the Bonasika Reserve, which contained a large number of indigenous *Sapium* rubber-producing trees, trials were made with various methods of tapping and coagulation of the latex for the purpose of investigating the value of these trees, but it was soon evident that the amount of latex and cured rubber rapidly decreased upon repeated tappings. "The yield," says the report, "cannot be considered as satisfactory." At the Pomeroun Experiment Station about three acres of rubber have been planted with Pará and *Sapium*. The former is said to be thriving well and making satisfactory progress, but the *Sapiums* are not doing so well.

In summing up, the authors of the report make the following statement: "It has been successfully demonstrated, by experimental plantings, that large areas of British Guiana are eminently suited for the cultivation of Pará rubber." To meet the demands for rubber plants the government imports and germinates the seeds and has a contract with the Botanic Gardens at Singapore covering the next five years, for the shipment of 15,000 *Hevea* seeds each year.

While the report was being prepared, tapping was going on at various points in the colony, and commenting on the samples sent to the Second International Rubber and Allied Trades Exhibition, held in London, Prof. Harrison remarks: "The indications at present show that returns equal to those obtained in the East may be expected from rubber planted in the colony."

Legislation is under consideration for the regulation of the balata industry that will systematize the engagement of laborers under contract, define more clearly the rights of employers towards the employed and between themselves and establish better means of enforcing those rights on both sides. It is intended to register and license only competent bleeders or reliable men capable of acquiring the necessary knowledge and to provide for their supervision while at work by government officers, so that unnecessary damage may not be done in the forests. It is also proposed to place the work of supervision in the hands of the Department of Lands and Mines as better capable of exercising the necessary control.

The absconding evil, which was so prevalent among balata bleeders here some time ago, has now abated considerably, but in

the neighboring colony of Dutch Guiana it shows no improvement. It is reported that the men are leaving the expeditions and crossing over to the British side of the Corontyne River, carrying with them the balata brought from the interior. The Government has been petitioned to seriously consider the adoption of stringent measures in order to remedy the existing state of affairs. For some time past the necessity for amending the ordinance regulating the balata industry of Dutch Guiana has been recognized by the Government, and a decision has been arrived at to submit the whole question to the Government in Holland, with a view to getting the amendments effected.

THE RUBBER CONGRESS IN PARA.

A VERY interesting congress was held in Pará in the latter part of August, in which a variety of topics relating to the commercial and agricultural development of that section was discussed. Some twelve different subjects were taken up during the session of the congress, five of these relating to rubber. These five topics are as follows:

Old and modern methods of extracting and coagulating rubber latex.

Practical means of avoiding adulteration.

Re-organization of the rubber commerce.

Organization of the cultivation of rubber trees.

The manufacture of rubber as an industry to be exploited by Brazil.

A comprehensive account of the proceedings of the conference, together with a large number of photographs taken at the time, has been sent us by one of the delegates. Unfortunately, however, owing to delay in the mills, it reached us too late to be used satisfactorily in this issue; but it will appear in our next number.

THE CONGRESS FOR THE DEVELOPMENT OF THE AMAZON COUNTRY.

THERE have been received from Dr. Jaques Huber of the Goeldi Museum of Pará, Brazil, the following publications and papers (which will receive more adequate attention in a later issue) presented at the Congress for the "Economical Protection of Amazonia," held in that city on the 15th of August last:

1. "Revista Commercial e Industrial do Pará."—A monthly publication issued by the Commercial Association of Pará, which makes the announcement of the purpose of the congress, and the papers to be read at its meetings; the program of the Rubber Exposition to be held in connection with the congress; an article on "The Rubber Crisis," and one on a new process for the treatment, washing and refining of rubber, by Mr. Alfredo Ferreira dos Santos, and the project of a new law to regulate the work in the rubber districts, by Leopoldo Penna Teixeira.

2. "The Cutting of the Seringueira"; by Dr. Jaques Huber, Director of the Museum Goeldi in Pará.—Comparing the process in use on the Amazon with that of the Orient.

3. "The Organization of the Agricultural Industry of the Seringueira."—Why the Seringueira should be cultivated in preference in Amazonia, and what process should be observed.

4. "The Culture of Cocoa."—Showing the necessity of reorganizing cocoa culture throughout the state.

5. "Considerations on the Manufacturing Industry in the Amazon District"; by Dr. Manoel Lobato.

6. "Reorganization of the Rubber Commerce"; by José Amando Mendes.—Considering the relation existing between the rubber owners and the exporters; Transportation and its cost, in the Amazon District; Freight, Taxes, Export Duties, and possible reduction of import duties.

7. "Instructions for the Smoking of the Latex of the Seringueira"; by Dr. Barroso Rebello.

8. "Economical and Commercial Protection of Amazonia"; by J. Barbosa Rodrigues, Jr.

9. "Old and New Methods of the Extraction and Preparation of Rubber in the Amazon District"; by Dr. José Ferreira Teixeira.

10. "Various Theses and Projects for Improving the Economical Situation of Amazonia."

11. "On the Creation of Rural Associations."

12. "Agricultural Instructions"; by Leopoldo Penna Teixeira.

13. "Measures Against Adulterations and Abuses."

14. "Project of a New Law Regulating Rubber Extraction in the Amazon"; by Joaquin Caribé da Rocha.

15. "The Culture of Tobacco."

THE RIO RUBBER SHOW TO OPEN OCTOBER 12.

The Exposition of Tropical Products, including rubber, which was to have been held in Rio de Janeiro last spring and which was postponed until this fall, is now scheduled to open on the twelfth of the present month. It is expected that a very good display of all varieties of South American rubber will be made on this occasion, and particularly of the varieties of rubber produced in the State of Minas Geraes, as this exhibit will be under the supervision of Mr. J. C. Cardwell-Quinn.

ENGLISH EXHIBITORS AT THE RIO EXHIBITION.

Some of the English manufacturers of rubber machinery have shown most praiseworthy enterprise in the exhibits which they have sent to the exposition to open at Rio de Janeiro on October 12. David Bridge & Co., Ltd., of Castleton, Manchester, will not only make a fine display of their machinery at that time but they have prepared a remarkable souvenir catalog for the occasion—a book of 136 pages and handsome cover, illustrated by hundreds of fine half tone cuts, giving a great many scenes of rubber gathering along the Amazon, with an equal number of plantation scenes from the Middle East, together, of course, with many views of their machinery in operation. It is a book that will be eagerly sought after and permanently preserved.

Francis Shaw & Co., Ltd., of London, have also installed three of their machines—a large Universal Washer, a heavy Washing Machine and a heavy Crepeing Machine—which will be under the constant supervision of one of their own experts.

These displays of rubber machinery, being absolutely new to the large part of those who will attend this exhibition, will undoubtedly attract a great deal of attention.

THE LABOR PROBLEM IN EAST AFRICA.

The labor question in German East-Africa is causing considerable trouble to the planters in the Tanga hinterland, where most of the European enterprises are conducted. The natives are distinctly disinclined to relinquish work on their little holdings in order to take up employment on a distant plantation, or are too much addicted to warlike or predatory pursuits to settle down to steady labor. As a remedy for the scarcity of plantation help, the importation of Chinese coolies or the introduction of natives from Portuguese East-Africa has been suggested. Others incline to the opinion that a head tax should be collected from the natives, who would have to work to raise means to pay it.

RUBBER FROM FRENCH EQUATORIAL AFRICA.

A United States Havre consular report states that although only about 300 tons of rubber figure annually as coming directly to France from French Equatorial Africa, an equal quantity from the same source is also received through the Belgian Congo. When the French colony has its own railroads its rubber exports will be properly credited.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

RUBBER PLANTING IN COCHIN-CHINA.

By Our Regular Correspondent.

ACCORDING to the report of the Japanese consul at Saigon, there are 12,900 hectares (31,863 acres) devoted to rubber planting in the east and north-east districts of Cochin-China, the southern part of Annam and the Kep section of Cambodia, the number of *Hevea* trees planted on this acreage being 4,005,011. While this territory was at one time considered suited only to the cultivation of rice, the results which have attended the planting of the *Hevea* tree have shown its suitability for rubber production, tho still regarded as slightly behind either Sumatra, Java or the Malay peninsula in this respect.

HISTORY OF RUBBER PLANTING.

The introduction of the *Hevea* tree into Cochin-China was started by Mr. Belland, who came here from Ceylon, setting out 15,000 trees. This experiment is said to have netted Mr. Belland a profit of 100,000 francs in the year following the first tapping. This was followed by the formation in 1907 of the *Société Agricole de Suzannah*, and the establishment of a rubber plantation along the line of the Indo-China Transcendental Railway, a similar enterprise, known as the *Société des Hevea de Xa-trach*, also being formed in 1908. Both of these enterprises have met with success. The French government has since been experimenting in rubber cultivation at the Ong-Yem Agricultural Test Bureau. Planting so far has not been conducted on a large scale, as in the Malay peninsula, no large stock companies having yet been formed, and the number of trees owned by each individual company ranging from 10,000 to 50,000.

PLANTATION DISTRICTS, SOIL AND CLIMATE.

The districts now under cultivation for rubber are Baria, Bien Hoa and Thudan Mot in Cochin-China; Guin Hon in Annam, and the more elevated parts of Kampot in Cambodia. The soil of these districts varies, from the red-brown soil of volcanic origin found in the Bien Hoa and Thudan Mot localities in which the French plantations above mentioned are located, to the gray soil on the estate of Mr. Belland. The temperature is about the same as that of the Malay states, and the year is divided into two seasons of about equal length, the rainy season—during which rain falls daily—and a dry season, when rain falls only two or three times a month. The *Hevea* sheds its leaves in the dry season, these falling gradually and new leaves budding at the same time. The spread of rubber diseases such as have been very injurious to the Malay rubber trees, is supposed to be checked by this dry season.

QUALITY.

Plantation rubber from Ong-Yem Agricultural Test Bureau was exhibited at the Second International Rubber Exhibition in London and on analysis was pronounced to be of superior grade, ranking seventh in the crude rubber competition of the world.

PLANTING.

The method and style of planting in these districts is similar to that employed in the Malay states, varying according to soil and climate. Seeds are now imported directly from Ceylon (the initial importation by Mr. Belland having come by way of Singapore), thus avoiding the introduction of diseases such as are known in Malaya. The preparation of soil is carried on during October to May, in the dry season, and planting is commenced with the beginning of the rainy period and ended about September. Cultivation is accomplished by means of horse, ox, and, in some cases, steam-driven cultivators.

TAPPING AND YIELD.

The whole herring-bone system of tapping is employed, and is stopped during January and February. The recorded yield varies from 1 kilogram (2.2 pounds) from a seven years' tree of the *Société Agricole de Suzannah*, to 2 kilograms from ten-year trees planted by Belland and also in the Bien district.

WAGES.

The wages of coolies in these districts are from 25 to 30 per cent. lower than in the Malay peninsula, and planters are at present experiencing no difficulty in securing sufficient help of this class, while with the completion of the Indo-China Transcendental Railway now being laid through Annam and Cochin-China, a still further supply will no doubt be easily available. Beside the coolies, it is also possible to secure the help of a half-barbarous native class known as "Moy." Their average wage is from 30 to 40 centimes a day for males, and 20 to 30 centimes a day for females, depending upon whether or not their food supply is included.

CULTIVATED AREA.

The area under rubber cultivation in Cochin-China is given in the following table, representing an approximate investment of over 30,000,000 francs:

Districts.	Cultivated area Hectare.	Hevea trees planted.
Baria	1,097	350,632
Bien Hoa	4,361	1,064,000
Giadinh	2,763	1,054,012
Tayninh	1,306	431,000
Thudan Mot	1,472	631,000
Ile di plu-quoc.....	373	93,367
Annam et Cambodge	28	81,000
Other districts	1,000	300,000
Total	12,900	4,005,011

NEW RUBBER COMPANIES IN JAPAN.

The Kamenofuchi Rubber Works, established July, 1913, at Fukae—between Kobe and Osaka—will manufacture rubber tires as well as surgical and electrical rubber goods. Mr. Kamenofuchi, the head of this concern, was formerly connected with The Alenken Rubber Works at Osaka.

The Naigai Rubber Co., established in August, 1913, at Sugawarantori, Kobe, with a capital of \$60,000, has as its purpose the manufacture of "The Prince Tire" and all other rubber goods, for domestic consumption and for export to China, the Malay states and other districts. The principal machinery for its plant has already been ordered, from David Bridge & Co., Limited, of England, and the crude rubber used by the company is to be imported from London. The manager of this enterprise is Mr. T. Ide, formerly connected with the Teat Co., Limited, of Kobe; its representative is Mr. J. Enami, and the expert is Mr. W. A. Wep, an Englishman.

Mr. U. Inokuchi, employed for some time past by the Sugii Rubber Works, but retired from that connection in July, 1913, when this concern became known as The Chiyoda Rubber Co., Limited (capital \$300,000), has become associated with the Kobe Rubber Manufacturing Co. at Kobe, it being his intention to familiarize himself with the foreign methods of rubber manufacture—which he believes he can do more readily in this way, from the English experts employed by this concern, than by going abroad. Mr. Inokuchi is a Bachelor of Engineering of the Tokio Imperial University.

ENTRIES FOR THE BATAVIA EXHIBITION CLOSE NOVEMBER FIRST.

As already announced, an International Rubber Exposition will be held at Batavia, Java, September 8, 9 and 10, 1914. Applications for space, stating the area required, must be addressed to the General Secretary of the Congress and Exposition, not later than November 1, 1913. The Dutch East Indian Government will admit, free of duty, all articles destined for the exhibition, which will cover, in addition to the rubber industry as practised in various countries, the different methods of cultivating rubber and preparing the product, with a special division devoted to rubber obtained from wild sources.

Some Rubber Planting Notes.

REDUCING THE PRODUCTION OF PLANTATION RUBBER.

WITH reference to the proposal for meeting present conditions by a reduced production of plantation rubber, the "Financier," of London, makes the following suggestion: "It is admitted that the situation now prevailing in the commodity is abnormal—that it has been brought about by other than natural means. Surely, then, what is termed artificial assistance is justifiable as a remedy. The only way to circumvent a bear raid in plantation rubber is to cut short the supply, and thus inaugurate a bull movement. This could easily be done by agreement amongst the larger producing companies to cease tapping. A fortnight of non-production would be quite sufficient. The sentimental effect of the decision would be far greater than the influence of the reduced output. The bears would certainly be caught, and the price of plantation rubber might conceivably revert to its normal level."

Referring to the question of reducing plantation production, the "Frankfurter Zeitung," a leading German daily, remarks that many plantation owners are said to be in a precarious situation, the formation of companies having taken place for the greatest part when the prices of rubber had reached an exceptional height. The prospects of these undertakings were estimated on a considerably higher level of prices than at present exists.

SOCIETE ANONYME DES PLANTATIONS DE TELOK-DALAM (FEDERATED MALAY STATES).

An increase in the number of trees is recorded, from 29,694 in January, 1912, to 60,688 at the end of that year. During the twelve months the yield was 90,986 pounds, the estimate having thus been exceeded by about 30,000 pounds. The output anticipated for 1913 is 176,000 pounds. This is a Belgian company, with headquarters in Antwerp.

SUNGEI KAPAR LOWERS COSTS.

The Sungei Kapar Rubber Co., Limited (Federated Malay States), has lowered the cost of putting its product on the market from 1s. 2.40 d. for 1911 to 1s. 0.51d. for 1912. Output increased from 338,480 pounds in the earlier to 466,271 pounds in the later year.

SIALANG RUBBER ESTATES, LIMITED.

According to a report issued by Harrisons & Crosfield, Limited, London, the crop of rubber harvested on the above company's estates for six months ended July 31, 1913, was approximately 126,092 pounds, of which, up to the date of the report (August 19) 65,041 pounds had been sold at a gross average of 3s. 6.85d. per pound.

ANGLO-MALAY RUBBER CO., LIMITED.

The crop of rubber harvested on the above company's estates for seven months ended July 31, 1913, according to a report sent out by Harrisons & Crosfield, Limited, amounted to 723,232 pounds, of which 388,379 pounds have been sold at an average gross price of 3s. 3.65d. per pound.

RUBBER SHIPMENTS FROM STRAITS SETTLEMENTS.

A cablegram to the Malay States Information Agency, London, from the Colonial secretary, Singapore, gives the exports of rubber from Straits Settlements ports during the month of August, as 2,946,400 pounds, compared with 2,509,333 pounds in July and 1,828,133 pounds in June. These figures include transshipments from adjacent places, such as Borneo, Java Sumatra and the Non-Federated Malay States, as well as rubber actually furnished for export by the colony, but does not include rubber shipments from the Federal Malay States.

A COLLEGE OF TROPICAL AGRICULTURE FOR CEYLON

According to an address delivered recently by the Director of Agriculture of Ceylon, the movement in favor of the establishment on that island of a College of Tropical Agriculture, is making favorable progress. Designs have been prepared for the three main buildings which will generally resemble those of the agricultural college at Cornell University, Ithaca, New York, and a site selected on high ground on the bank of the Mahaweli Gango, Ceylon's largest river, opposite the Royal Botanic Gardens at Peradeniya.

According to present plans, the main buildings, which are to cost about \$200,000, will include laboratories, a central auditorium, library and museum, and dormitories for resident students. The chief subjects to be taught will be agriculture, chemistry, soil bacteriology, botany, mycology, zoology, entomology, horticulture, irrigation, veterinary science, physics, land-surveying, mechanics, meteorology and bookkeeping. Work on the plantations outside will be a special feature of the course, which is expected to take a year for men with degrees in agriculture desiring to specialize in tropical agriculture, and at least two years for less advanced students. It is also proposed to receive non-resident students.

RUBBER PROFITS RECOUPING LOSSES ON TEA.

The Doranakande Rubber Estates, Ceylon, report that the whole of their trees are in bearing, the output (at about 55,000 pounds) having been produced at a cost f. o. b. Colombo of less than 1s. per pound, or exclusive of manuring, under 8¼d. In view of the tea crop having been sold at a loss, the company proposes to do away with that branch of its production, confining itself to rubber.

THE RUBBER PRODUCTION OF BURMA.

The growing importance of Burma in rubber cultivation is indicated by recent statistics from Consul Maxwell T. Moorhead, of Rangoon. Total exports to all countries except India represented in 1911 \$188,731, and in 1912 \$493,095. The United States' share was, however, trifling, having been in 1911 *nil*, and in 1912 \$399. Estimates of the area under rubber are: 1911, 20,100 acres, and 1912, 32,772 acres, a prospective increase of yield being thus indicated.

Imports of Burma in rubber goods, apart from clothing, were:

	1911.	1912.
Total	\$40,845	\$63,607
Includ- (United States	4,172	1,973
ing (United Kingdom .....	.....	46,520

RUBBER GROWING IN MALABAR.

A correspondent of "Capital," of Calcutta, invites attention to the growing importance of the rubber industry in Southern India, there being no less than 35,000 acres of land under rubber in the Malabar district alone. An enterprising grower is said to be arranging with a native landowner for the purchase of a whole hill in South Malabar, containing several thousand acres, to be mainly devoted to rubber. The writer claims that Malabar rubber equals that of Ceylon in quality and yield, while the prices obtained compare favorably with those of any other rubber in the market.

RUBBER FROM BRITISH HONDURAS

Exports of rubber to the United States from British Honduras were as follows: 1911, \$16,382; 1912, \$18,735.

THE QUALITY OF PLANTATION RUBBER.

THE following comments on the above subject are extracted from a recent issue of the *Bulletin du Caoutchouc et de la Bourse*.

During the past year undeniable progress has been made in the preparation of plantation rubber. There is no longer a doubt that the most carefully prepared kinds combine all the physical properties of raw rubber of the highest quality.

Manufacturers show a marked preference for smoked sheet and crepe. At the beginning of 1912, crepe was in largest demand, but since then, smoked sheet of premier quality being less plentiful, the demand has turned mainly to this article, which led at the bi-monthly sales in London. Until then, the greater portion of the crop was shipped in the form of crepe; but the premium paid for smoked sheet has inevitably increased its production, and in all probability the prices of these two varieties will eventually be equalized.

The preparation of smoked sheet, which takes longer and is a more delicate operation than the production of crepe, was a disadvantage, because the smoking and the drying, the two principal operations, had to be conducted very carefully, so that rubber shipped in this form would not arrive in a state making its use impossible.

A new process of smoking obviates all these difficulties and it is anticipated that the smoked sheet, which is undoubtedly the better type, will be more plentiful on the market. The improvement effected in the preparation of brown crepe and of scrap by exposure to the winds, and by the removal of the impurities that have formerly reduced their value, has been frequently remarked.

It is evident that the epoch of groping is at an end and manufacturers will not fail to appreciate the uniformity in the quality of the product that will be delivered to them.

COAGULATING TANKS.

EXCELLENT results have attended the introduction in Malaya of coagulating tanks, which appear to possess advantages not always obtained by the usual method of coagulating with trays. The tank is a large, shallow receptacle, into which the fresh latex is poured. The first tanks used in Malaya were made with a glazed tile lining, but good results have also been obtained with wood lining when sufficiently smooth. In the bed of the tank are grooves, with intervening spaces equalling the breadth required for the strips of coagulated rubber, for convenience in putting through the crêping machines. When the latex has been standing some time, but before it begins to harden, wooden partitions are pushed into the grooves, so that the tank becomes a series of separate chambers, from which the solidified latex can be taken in strips of the exact size required.

Uniformity of treatment is insured by this method, the coagulation of a large quantity of latex being effected at one time, under precisely similar conditions, and with an equal distribution of acetic acid.

According to a description in the "Malay Mail" of the tank being used on the Sungei Tua Estate, it is about 6 inches deep by about 10 feet long and 3 feet broad. It is filled with fresh latex, and the acids used in the coagulation are added. After the parallel partitions are put in, a wooden cover is placed on the top, which is not removed till the next morning, when the strips of coagulated rubber, reduced to a thickness of about $2\frac{1}{2}$ inches, are taken out. They are then ready to be passed through the machines preparatory to being smoked, except that they have first to be further reduced in thickness through being trodden out by coolies.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

RUBBER IN THE FRENCH CONGO.

AN interesting account of the rubber resources of Central Africa is given in a recent number of *Annales de L'Institut Colonial de Bordeaux*, from which we extract the following on the subject of rubber culture in French Equatorial Africa:

In this zone, known botanically as the Soudanese zone, lianas such as the *Landolphia owariensis* and *Landolphia Heudelotti* (from the coast of N'Dellé) are utilized. They shoot up especially in the neighborhood of the rivers and in the less wooded places and those preserved from brush fires. But where the forest does not exist, or where the spontaneous vegetation is destroyed by fire, the liana cannot exist under its customary vegetative conditions; it is transformed and appears only as woody tufts. The aerial organs are destroyed every year, but the underground parts are abnormally developed and produce rhizomes gorged with latex. These plants, described for the first time by M. A. Chevalier, at the time of his mission in Central Africa, were not then utilized. The natives had few wants and the administration required but little of them. The few baskets of rubber they brought in, either to the factors, or in payment of taxes, were obtained by tapping the liana. But since 1903 things have changed; traffic has developed, owing to the arrival of many free merchants, and the contribution has gradually increased to several hundred thousand francs, representing each year, 150 to 200 tons of rubber. The section that furnished 3 or 4 tons in two or three years has increased its output tenfold, not only on account of paying tribute in produce, but because the natives are beginning to buy merchandise, such as salt, beads, knives, etc. There is no doubt that if the stations were better stocked and sold cheaper, their business and consequently offerings of rubber would increase—that is, if the business were conducted in exchange, and not in cash.

The establishment of plantations, under conditions to be determined, would be the best means of assuring to the country the conservation of the sole product of value that it can furnish. There has already been obtained, under favorable conditions, a rapid multiplication of spontaneously growing plants, but this does not appear to be the solution; it is the cultivation of trees to which recourse should be had. Experiments covering a considerable area and with different varieties have already been made, which should serve as a basis for the establishment of plantations.

REDUCING FREIGHT CHARGES ON CONGO RUBBER.

In view of the critical condition of the rubber market a reduction in the cost of transportation of rubber has been made in the Belgian Congo. The Congo Railway, with the consent of the Belgian government, reduced the cost of transporting rubber between Stanley-Pool and Matadi, from 1 franc 75c., to 35c. per kilometer ton, after July 1. The Citas Company has likewise met the demands of exporters as to the cost of transportation on the Congo River and its tributaries. Since August 1, the cost of carrying rubber from Stanleyville or Parnia-Matumbo (Sankuru) and Kinshassa, has been reduced from 120 francs to 84 francs per ton. An equivalent reduction has been made in transportation charges from other points, but Belgian commercial circles do not consider the reductions important enough to afford relief to the Belgian rubber exporting industry, tho a recent decree of the colonial minister, by which the export duty on rubber is practically abolished, will, it is expected, contribute materially to this effect.

BUKIT RAJAH RUBBER CO., LTD. (FEDERATED MALAY STATES).

This company's output for the year ending March 31 last amounted to 618,374 pounds, against 567,214 pounds for the preceding annual period. For the current year the managers estimate the yield as 640,000 pounds.

RUBBER CULTIVATION IN NIGERIA.

Mr. Frank Evans, formerly connected with the English Botanical Gardens at Trinidad, but during the last year acting as director of agriculture at Onitsha, Central Province, Nigeria, left on the 10th of August on a leave of absence to cover several months, and may possibly visit America before returning to his duties in Africa. In his latest annual report on the agricultural department he has this interesting paragraph on rubber: "Rubber under cultivation in this country is confined chiefly to *Hevea Brasiliensis* (Pará) and *Manihot Glaziovii* (Ceara), while *Funtumia elastica* and several species of *Landolphia* and *Ficus* are indigenous and occur in fairly large quantities in various parts of the Protectorate. The moist zone is eminently suitable for the growth of *Hevea Brasiliensis*, and should its cultivation be seriously taken up there is no doubt that Southern Nigeria would take a foremost place as a rubber producing country. Two twenty-year-old trees experimentally tapped at Ebute Metta yielded an average of 7 pounds $4\frac{3}{4}$ ounces dry rubber during 1912."

RUBBER CULTIVATION IN PAPUA.

THE island of Papua, or New Guinea, includes Dutch New Guinea in the western section, German New Guinea in the north-eastern portion, and British New Guinea in the southeastern part. According to the "Handbook of the Territory of Papua," compiled by the Hon. Staniforth Smith, administrator, the British possessions in the island are 800 miles from east to west, and 200 miles from north to south, the total area of the mainland being 87,786 square miles, while the adjacent islands represent 2,754 square miles. The total coastline of the territory has been estimated as 3,664 miles, of which 1,936 belong to the islands between Papua and Queensland. The island is watered by large rivers, navigable for many miles inland by small vessels and steam launches.

According to the "Handbook" the total area planted in rubber on March 31, 1909, was 1,702 acres. Rubber exports have been as follows: 1905-6, \$5,725; 1906-7, \$6,925; 1907-8, \$2,415.

The opinion is expressed that there is no country better suited for rubber growing than Papua, possessing, as it does, an immense area of easily accessible virgin forest and scrub land lying along the coast, as well as equally good land—tho at present less accessible—lying further inland. The rainfall is heavy and evenly distributed, while the labor supply is good and apparently plentiful.

Papua is outside the range of hurricanes, which occasionally ravage the southern part of the Western Pacific and North Queensland.

CEARA RUBBER IN THE SUDAN.

EXPERIMENTS were lately carried out by the Imperial Institute, London, with a specimen of Ceará rubber from the Sudan. The sample was a light brown sheet rubber, with good elasticity and tenacity, the analysis showing 82.7 per cent caoutchouc, 1.7 per cent moisture, 6.4 per cent resin, 7.8 per cent protein and 1.4 per cent ash. It had been excellently prepared and was in very good condition. The rubber it represented was sold at one penny above the price for fine hard Pará at the time.

In view of this favorable report, interest attaches to the statement of Mr. D. S. Corlett, the new superintendent of the Experiment Station, Peradeniya, Ceylon, (who has lately come from the Sudan), that the Forest Department of the Sudan started the cultivation of the common Ceará (*Manihot Glaziovii*) as an experiment, to see if it would do well in that country. They opened about five stations in different parts of the Upper Nile, each plot being about 100 acres in extent. Ceará requires a well-drained soil, whether sand or loam, and the experimental stations proved a failure. Mr. Corlett attributed this fact to the Sudan being too marshy for this particular rubber.

RUBBER IN GERMAN EAST AFRICA.

ENGLISH consular statistics show that a remarkable development has taken place in the cultivation of rubber during late years in German East Africa. Eight rubber plantations passed into the hands of British companies at high prices, the total capital representing about \$6,000,000.

The value of plantation rubber exported from the Protectorate rose to its highest point in 1910, owing to the artificially high price then current. At that time there were 248 plantations, with a cultivated area of 63,990 acres and 20,558,965 trees.

Practically all the rubber planted is *Manihot Glaziovii*, which, it is said, can be tapped at the age of three years; the other varieties planted, such as *Kickxia*, *Hevea Brasiliensis* and *Ficus Elastica*, being mostly by way of experiment.

The value of shipments of plantation rubber in recent years is shown as follows: 1908, \$103,990; 1909, \$279,435; 1910, \$822,985; 1911, \$901,570. In 1911, Germany took 70 per cent., and the United Kingdom the bulk of the remainder.

It is added that no entirely satisfactory method of tapping has yet been discovered, most planters having returned to the system of collecting the rubber by regular series of shallow incisions. The latex is coagulated by an acid solution on the tree, and afterwards collected by hand. There are, however, machines at Muhesa, Mombo and Tanga for cleaning the rubber, rolling and drying it, until it assumes the form known on the market as crêpe.

WILD RUBBER.

Only this class of rubber is collected by native labor. The fall in price in 1908 led to a diminution of exports, collection being to a great extent abandoned for the time. When the "boom" of 1910 ensued, the natives again became very active, but when prices dropped to a normal level their diligence relaxed.

In many districts the natives only take up wild rubber collection as a last resort for meeting their taxes.

In 1910 the exports of wild rubber from German East Africa were about 670,000 pounds, value \$725,735; while in 1911 they were only about 344,000 pounds, worth \$293,755. This reduction was partly occasioned by the fall in prices, and partly by the fact that the 1910 figures had included some rubber in transit from the Congo, which did not figure in the returns for the later year.

RUBBER IN TROPICAL AFRICA.

Discussing this subject in the "Agriculture Tropicale," M. Aug. Chevalier states that the annual production of rubber in tropical Africa has been stationary for a number of years, being about 15,000 tons annually. All this, except a few hundred tons produced in German East Africa, is gathered from forest trees of natural growth. The intensive exploitation of the trees in many districts has led to reduced export from a number of colonies.

M. Chevalier expresses the opinion that there are no further reserves of rubber likely to be found in tropical Africa.

REDUCED PROFITS OF AFRICAN RUBBER.

At the recent London meeting of the Eastern International Rubber and Produce Trust, Mr. W. F. de Bois Maclaren, the chairman, stated that the profits of African wild rubber producing companies have already vanished. The total cost of producing the rubber is given as equalling 72 cents per pound, while the average price lately realized has been about 50 cents. In view of the increasing supply of pure plantation rubber, he considered the outlook of African rubber anything but bright.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED AUGUST 5, 1913.

- N** 1,069,137. Anti-kidding attachment to auto wheels. E. E. Hosmer, New York.
- 1,069,138. Rubber tire. R. E. Bluff, Iowa.
- 1,069,139. Rubber tire. W. J. Bluff, Iowa.
- 1,069,140. Rubber tire. B. C. Bluff and L. E. Youngie, Portland, Ore.
- 1,069,141. Rubber tire. W. S. Lotimer, Portland, Ore.
- 1,069,349. Demountable rim. F. and N. M. Spranger, Detroit, Mich.
- 1,069,356. Hand stamp. M. Tilden, Los Angeles, Cal.
- 1,069,357. Rubber tire. B. W. Whitlock, Russia.
- 1,069,452. Punctureless spring tire. D. W. Martin, Washington Court-House, Ohio.
- 1,069,453. Rubber tire. J. H. W. Kopp, Port Clinton, near Eaton, Ohio.
- 1,069,454. Rubber tire. W. C. Smith, St. Louis, Mo.
- 1,069,455. Rubber tire. C. B. Smith, St. Louis, Mo.

- 44,436. Rubber brush. O. Eick, St. Louis, Mo.
- 44,437. Rubber brush. O. Eick, St. Louis, Mo.

ISSUED AUGUST 12, 1913.

- 1,069,662. Parachute launching device. D. W. Adams, Glendale Springs, N. C.
- 1,069,686. Rubber tire. L. E. Bluff and L. M. Andrews, Nashville, Tenn.
- 1,069,691. Life preserver. C. A. E. Hansen, Sabine, Tex.
- 1,069,732. Medicine dropper. L. P. Savage, LaPorte, Ind.
- 1,069,750. Rubber tire. W. J. Bluff and J. C. Bluff, Chicago, Ill.
- 1,069,778. Rubber tire. H. M. Bluff, Portland, Ore.
- 1,069,781. Advertising device. M. H. Harris, New York.
- 1,069,814. Rubber tire. J. H. W. Kopp, Richmond Hill, N. Y.
- 1,069,815. Garter. H. L. Carpenter, Minneapolis, Minn.
- 1,069,868. Rubber tire. C. B. Smith, St. Louis, Mo.
- 1,069,885. Tire chain. F. P. Larson, Plainview, Neb.
- 1,069,904. Fire hose connection. W. E. Sanders, Brownville, N. Y.
- 1,069,951. Caoutchouc substance and process of making same. F. Hofmann and C. Coutelle, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., both of Elberfeld, Germany.
- 1,070,041. Elastic fabric. W. Kops, assignor to Kops Bros., New York.
- 1,070,183. Elastic tire for vehicles. M. D. Rucker, Purley, England.
- 1,070,250. Pocket garter. M. J. Hamburger, Bayport, N. Y.
- 1,070,258. Production of caoutchouc substances. F. Hofmann and C. Coutelle, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., both of Elberfeld, Germany.
- 1,070,259. Process of producing caoutchouc-like substances. F. Hofmann and C. Coutelle, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., both of Elberfeld, Germany.
- 1,070,339. Tree-tapping apparatus. G. M. von Hassel, New York.
- 1,070,340. Rubber tire. C. J. White, assignor to C. J. White Mfg. Co., both of New Britain, Conn.

- 63,100. Rubber tire. W. C. Smith, St. Louis, Mo.
- Brand. Waterproof outer garments, etc.

ISSUED AUGUST 19, 1913.

- 1,070,395. Garment supporter. E. L. Bradford, Takoma Park, D. C.
- 1,070,422. Toy balloon. F. J. Creque, Cuyahoga Falls, Ohio.
- 1,070,440. Reversible tire tread. C. F. Fisk, Allentown, N. J.
- 1,070,441. Rubber tire. S. A. Henson, Youngstown, Ohio.
- 1,070,516. Separable sanitary nursing bottle. O'Brien, San Bernardino, Cal.
- 1,070,557. Hose supporter. L. C. Stuckenborg, Birmingham, Ala.
- 1,070,596. Composition of matter for curing punctures in pneumatic tires. G. Fuenfstueck, assignor to The S. & H. Supply and Machinery Co., both of Denver, Colo.
- 1,070,630. Vacuum cleaning nozzle for pianos. A. E. Reeves, Helena, Mont.
- 1,070,639. Life saving device. E. Topper, Kiel, Germany.
- 1,070,642. Elastic armband. C. Weaver, Pittsburgh, Pa.
- 1,070,694. Child's dress. C. Keller, Philadelphia, Pa.
- 1,070,695. Rubber tire. S. A. Henson, Youngstown, Ohio.

- 1,070,787. Vaginal syringe. A. C. Eggers, New York.
- 1,070,821. Vehicle wheel. C. Lampre, Pittsburgh, Pa.
- 1,070,976. Shaving brush. F. J. McGuane, Chicago, Ill.

Reissue.

- 13,608. Device for treating cutaneous diseases. I. Rightmire, Paterson, N. J.

Design.

- 44,510. Tire. L. M. Boudaust, Albany, Ohio.

Trade Mark.

- 70,390. J. W. Buckley Rubber Co., N. Y. The word *Invincible*. Rubber tubing, hose, etc.
- 70,394. J. W. Buckley Rubber Co., N. Y. The word *Rebus*. Rubber tubing, hose, etc.
- 71,853. Boston Rubber Co., Boston, Mass. Company's name as trade mark. Rubber coats.

ISSUED AUGUST 26, 1913.

- 1,071,015. Respirator. J. Adler, New York.
- 1,071,031. Antiskidding device for vehicles. C. W. Cramer, Scranton, Pa.
- 1,071,032. Vehicle wheel. C. W. Cramer, Scranton, Pa.
- 1,071,062. Means for controlling the flow and delivery of liquid for surgical, medicinal, and other purposes. F. W. Lambden, Chicago, Ill.
- 1,071,071. Rubber tire tread. H. L. McClaren, assignor to Racine Rubber Co.—both of Racine, Wis.
- 1,071,109. Respirator. C. Stiriz, New York.
- 1,071,113. Swimming appliance. J. R. Teters, Sunnyside, Cal.
- 1,071,124. Tire tube tester. H. E. Whitney, Cambridge, Mass., assignor to Dover Stamping & Mfg. Co., Portland, Me.
- 1,071,191. Tire for automobiles and other vehicles. B. Turgeon, Bonesteel, S. D.
- 1,071,206. Demountable tire rim for vehicle wheels. M. H. Collom, assignor to The Collom Demountable Rim Mfg. Co.—both of Denver, Col.
- 1,071,229. Elastic tire for vehicle wheels. H. P. Haas, Brussels, Belgium.
- 1,071,378. Tire saver. L. Willour, assignor to The Ashland Mfg. Co.—both of Ashland, Ohio.
- 1,071,418. Non-skidding device. H. J. Hershheim, Pleasant Prairie, Wis.
- 1,071,432. Atomizer. G. J. Kelley, Attleboro, Mass.
- 1,071,438. Tire. W. C. Kroegher, Bellevue, Pa.
- 1,071,524. Envelope closing and sealing device. D. W. Lewis, Norwood, Ohio.
- 1,071,581. Vehicle tire. T. A. Robinson, Salt Lake City, Utah.
- 1,071,595. Puncture repair plug. C. R. Terrell, assignor to Terrell Mfg. Co.—both of Montesano, Wash.
- 1,071,628. Automobile tire pump. E. S. Ryone, Bristol, R. I., assignor to Charles A. Cartirt, Providence, R. I.

Design.

- 44,574. Lady's rubber. W. C. Mohr, Pittsburgh, Pa.

Trade Marks.

- 68,693. Lee Tire & Rubber Co., Whitmarsh township, Montgomery county, Pa.
- 68,694. Lee Tire & Rubber Co., Whitmarsh township, Montgomery county, Pa.
- 70,162. "Semperit" Oesterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna XIII, Austria.
- 71,881. J. W. Buckley Rubber Co., New York. The word *Wabron*. Rubber, cotton and linen hose.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

*Denotes Patents for American Inventions.

ABSTRACTED IN THE INDIA RUBBER WORLD, AUGUST 7, 1913.

- 8,756 (1912). Vulcanizers. G. L. Pauer, Koestlberg, Vienna, Austria.
- 8,759 (1912). Means of attaching tires to rims. J. Jelley, St. Kevins, Queens Road, Coventry, England.
- 8,770 (1912). Sheath for the back portion of croquet shoes, etc. E. H. L. Evans, Mt. Vernon, Caterham Valley, Surrey, England.
- *8,851 (1912). Elastic fabrics with non-elastic borders. W. Kops, 16th street, New York, U. S. A.
- 8,876 (1912). Means of preserving rubber articles by treatment with terpineol, etc. C. Beyer, 53 Mainzerstrasse, Cologne, Germany.
- 8,953 (1912). Stocking protector. T. Rankine, 3 Chambers street, Edinburgh, Scotland.

- 8,992 (1912). Process of devulcanizing india-rubber by treatment with hot liquid carbon in the presence of catalytic agents. H. P. C. G. Debaugé, 32 Avenue Montaigne, Paris.
- 9,023 (1912). Belt and suspenders for trousers. J. G. Pahlke, 184 Rue de Courcelles, Paris.
- 9,092 (1912). Expansion facilitating coats and jackets, having a seam held together with elastic material. J. Haigh, 6 Half-field Arcade, Manningham Lane, Bradford, England.
- 9,182 (1912). Appliance for facilitating hearing. A. von Suchorzynski, 1 Schildstrasse, Stettin, near Berlin, Germany.
- 9,329 (1912). Rubber end for tone arm joint of gramophone. A. Fils, Johannestrasse, Erfurt, Germany.
- *9,332 (1912). Wheel tire composed of helical spring imbedded in a rubber tube. J. F. Bosquett, 75 Laidlaw avenue, Jersey City, N. J., U. S. A.

(ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 12, 1913.)

- 9,337 (1912). Deformity appliances. E. Edwin, 39 Beauchamp Road, Clapham Junction, London, England.
- 9,364 (1912). Vehicle wheel with continuous outer rigid ring, rubber cushion and helical springs. A. T. Reid, Hibernia Works, Springburn, and J. Riekie, 277 Nithsdale Road, Dumbreck—both in Glasgow, Scotland.
- 9,388 (1912). Flexible tooth brush for attachment to the finger. T. C. Bamfield, 22 Cornwallis Crescent, Clifton, Bristol.
- 9,446 (1912). Spring wheel with sectional rubber tire and curved metal segment. J. Wilson, Nairn street, Glasgow, Scotland.
- 9,570 (1912). Soothing teat packed with rolled up rubber sheeting. W. Burton, 92 Alfreton Road, Nottingham, England.
- 9,634 (1912). Massage appliance of rubber. J. C. Johansen, 48 Welbeck street, Cavendish Square, London.
- *9,687 (1912). Spring wheel with flexible or non-rigid rim. E. A. Finzer, R. F. D. No. 1, Box 14, Hicksville, Ohio, U. S. A.
- 9,702 (1912). Dimpled ball. H. L. Short, A. F. Short and H. O. Short, 6 Palace of Wales Mansions, Queen's Road, Battersea Park, London.
- 9,755 (1912). Railway vehicle buffer spring. J. G. Robinson, Boothdale, Fairfield, near Manchester, England.

(ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 20, 1913.)

- 9,817 (1912). Rubber lined boots, etc. J. M. Macintosh, Woolhampton, Berkshire, England.
- *9,860 (1912). Spring wheel with rigid outer rim and pneumatic rubber rim and cushions. H. J. Sewell, 304 Telegraph Buildings, Detroit, Mich., U. S. A.
- 9,963 (1912). Cover for wheel tires. G. Gerbi, 30 Via Alcaudi, Milan, Italy.
- 10,015 (1912). Metal tread band for wheels secured between layers of rubber. F. H. Watkeys, 11 Bryn Terrace, Llanelly, Carmarthenshire, Wales.
- 10,103 (1912). Block tire with non-metallic elastic body and core. A. Tomlins, 21 Churton street, Fimlico, and H. N. Gray, 334 Commercial Road—both in London.
- 10,153 (1912). Non-skid wheel tire. B. W. Wittenberg, 31 Wiedendamm, Riga, Russia.
- 10,165 (1912). Vulcanite disk for medical and like syringes. G. R. Hughes, Great Hampden, Buckinghamshire, England.
- *10,230 (1912). Wheel tire cooled by circulation of fluid. A. B. Craig, Tarkio, Mo., U. S. A.
- 10,250 (1912). India-rubber tension springs for vehicles. F. Walton, 114 Holborn, London.
- 10,353 (1912). Jacket and covers for pneumatic tires. F. Heinemann, Hubertusstrasse, Berlin-Grunewald, and W. Boehm, 39 Mommenstrasse, Charlottenburg—both in Germany.
- 10,435 (1912). Stopping for teeth. L. Filderman, 2 Rue Rosa-Bonheur, Paris.
- 10,439 (1912). Tread bands for tires with attachments to rims. H. Donnelly, 49 Wilson street, Finsbury, London.

(ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 27, 1913.)

- 10,496 (1912). Vulcanite packing for arc lamps. F. W. E. Schuer, 10 Myddleton Square, London.
- 10,631 (1912). Damping pad for talking machine needles. H. S. Wainwright, Alfred House, Ashford, Kent, England.
- 10,634 (1912). Tire vulcanizers. A. Olier & Co., St. Remy, Clermont-Ferrand, Puy-de-Dôme, France.
- 10,683 (1912). Duplex tube wheel tire attachment to rims and tread band. F. S. Farnsworth, 84 Osborn avenue, Jesmond, Newcastle-on-Tyne, England.
- 10,744 (1912). Wheel tire with concentric spring rings embedded in rubber. R. van Driessche, 17 Rue Armand Van Campenhout, and P. Maheu, Lembeq, Belgium.
- 10,852 (1912). Casing for gramophone sound box. A. Bug, Greifwalderstrasse, Berlin.
- 10,858 (1912). Elastic webbing. J. H. B. Dawson, Dawson's Corner, Fore street avenue, London.
- 10,874 (1912). Protective ring for line throwing apparatus. S. M. Edenborough, Ray View, The Leas, Westcliff-on-Sea, Essex, England.
- 10,914 (1912). Apparatus for detecting and closing punctures in tires. F. Humphris, Barton Peveril, Eastleigh, Hampshire, England.
- 10,915 (1912). Auxiliary rim attachment carrying elastic tire for wheels. F. Humphris, Barton Peveril, Eastleigh, Hampshire, England.
- 10,919 (1912). Detachable rim attachments for wheels. F. Humphris, Barton Peveril, Eastleigh, Hampshire, England.
- 10,947 (1912). Rubber resin solutions. F. Boehm, Ltd., 16 Jewry street, and C. A. Reihl, 30 Homeleigh Road, Waverley Park—both in London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application.)

- 453,881 (April 15, 1912). C. Grand. Process of extracting resinous substances contained in the wastes or residues resulting from the distillation of gums or turpentine.
- 453,927 (February 1, 1913). G. H. Simonin. Portable and automatic vulcanizing apparatus for rubber parts.
- 453,938 (February 3). E. Berille. System of elastic tires for vehicle wheels.
- 454,133 (February 10). G. Photakis. New style of pneumatic tire.
- 454,151 (February 10). Chapuis, Szoke & Katona. Protective armor and anti-skid for pneumatic tires.
- 454,271 (February 12). J. Borel and F. Grange. Improvement in rubber tire tread.
- 454,362 (February 14). L. Bourgeois. Anti-skidding tire for vehicle wheels.
- 454,365 (February 14). A. Witzel and A. Fiderer. Process and apparatus for the manufacture of a filled rubber tire for automobile wheels.
- 454,443 (February 17). R. P. G. Buzat. Process and apparatus for recovering the benzine mixed with rubber.
- 454,444 (February 17). R. P. G. Buzat. New process and apparatus for the manufacture of non-vulcanized rubber sheets.
- 454,457 (February 17). B. H. Divine. Tire for vehicle wheels and process and apparatus for their manufacture.
- 454,514 (February 18). G. Charavet. Elastic wheel tire composed of spring shoes.
- 454,522 (February 18). R. W. Sampson. Improvement in stopping plugs for the repair of punctures in pneumatic tires and similar articles.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity.)

- 262,993 (March 5, 1912). Mould core for hollow rubber articles of every kind, especially for inner tubes for pneumatic tires.
- 36,040, class 39b (February 25, 1913). Process for accelerating the vulcanization of natural or artificial rubber varieties. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen, near Cologne and Elberfeld.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 256,813. Vulcanizing press. A. Lambrette, rue Saint Vincent, 43, Paris, France.
- 256,814. Improvements in vulcanizing presses, autoclaves and similar apparatus. A. Lambrette, rue Saint Vincent, 43, Paris, France.
- 256,821. Improvements in the manufacture or preparation of rubber or substances similar to rubber. F. E. Matthews, E. H. Strange and H. J. W. Bliss, 7 Staple Inn and Ingram House, Stockwell, London.
- 256,867. Process for the production of isoprene. Badische Anilin and Soda Works, Ludwigshafen on the Rhine, Germany.
- 257,092. Improved process for cementing together pieces of rubber, particularly for the repair of air tubes of pneumatic tires. A. J. A. Chatel, rue Fontainas, Brussels.

HOW SAILORS CAN WORK UNDER WATER.

An ingenious German sea captain has invented a simple device by which a sailor can keep perfectly dry while working on the side or bottom of a ship at a considerable distance under water. The device consists of a long canvas bag—the length of it to be determined by the depth of the particular ship—cylindrical in form, except that it tapers down from a diameter at the top of two feet to a width at the bottom of one foot. The bag is kept expanded and in shape by iron rods, and heavy weights attached to the base keep it in position in the water. At the proper distance from the bottom there are three glass windows, enabling the operator in the bag to look about him in any direction. At the height of one's shoulders there are two large sleeves finished off with tight-fitting rubber wrists. The operator gets into the bottom of the bag, puts his arms through the sleeves, looking to it that the rubber cuffs fit tight enough to exclude water, and then the bag is dropped over the side of the ship and let down to the point that needs repairs, while the man works away comfortably and dry—the only part of him exposed to water being his hands.

This, of course, is not intended for use where the repairs are extensive and properly call for dry-docking, but it would serve very well where the needed repairs are slight and can be accomplished under the water.

Report of the Crude Rubber Market.

At the beginning of the past month the crude rubber market was quiet, business being confined to small jobbing lots which changed hands at prices within current quotations. Owing to the small supply on hand quotations were only nominal, but prices showed a slight recovery from the low figures quoted last month, August having closed with up-river fine at 89 to 90 cents, Islands fine at 75 to 76 cents.

There was no such improvement in the demand as the long continued season of hand-to-mouth buying on the part of consumers seemed to promise. The rising tendency brought a few of them into the market, but with futures still offering at a liberal discount, their enthusiasm was checked and they were but limited buyers; but the fact that offerings were small kept the market reasonably steady.

The continued indifference of buyers, however, brought about an easier tendency on the part of holders, which reports of a slight falling off in foreign quotations encouraged; and under these influences up-river fine went down to 84 cents, and Islands fine to 71 cents. The decline was followed by a decided manifestation of interest on the part of buyers and several small lots changed hands at these figures, which remained in force for several days, but on a quiet market. The decline prompted a suggestion that producers temporarily curtail their output in order to force prices to a higher level, prevailing figures leaving little profit for the planter.

In London, the September market opened with some irregularity, Brazilians displaying an upward tendency, while plantation grades went down. Business, however, remained quiet and steady, altho the reported existence of a large short interest in plantation grades was regarded as a forecast of a possible increase in demand. At the first of the fortnightly auctions of plantation rubber, there was but little competition, and only unimportant changes in prices, which ruled low; first latex pale crepe bringing 2s. 6¾d.; fair to fine smoked sheets, 2s. 9¼d.; clean brown crepe, 2s. 3½d.; pale gristly, 2s. 7d., and unsmoked sheets and biscuits, 2s. 6¾d.

Prices for up-river fine and plantation crepe at the closing, as given in this publication for the past five months, with the difference in price between these two grades of rubber, are shown in the following table:

	Up-river Fine.	Plantation.	Difference.
April 26	3s. 4½d.	3s. 2½d.	2d.
May 26	3s. 8½d.	3s. 2½d.	6d.
June 25	3s. 8¾d.	2s. 11d.	9¾d.
July 26	3s. 7d.	2s. 9½d.	9½d.
August 27	3s. 9½d.	2s. 8d.	1s. 1½d.
September 25.....	3s. 7½d.	2s. 4d.	1s. 3½d.

Scrap.—Light demand and moderate stocks, with steady prices, describes the condition of the home market, which is featureless. Foreign scrap is in scant supply abroad and prices strong on a firm market.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York one year ago, one month ago, and September 30—the current date:

PARA.	Oct. 1, '12.	Sept. 1, '13.	Sept. 30, '13
Islands, fine, new.....	106@107	77a 78	71a 72
Islands, fine, old.....	109@110	.....	.....
Upriver, fine, new.....	109@110	88a 89	80a 82
Upriver, fine, old.....	118@119	92a	85@86
Islands, coarse, new.....	55@ 56	29@ 30	29@30
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	84@ 85	51@52	48@49
Upriver, coarse, old.....	.....	.....	.....
Cametá	59@ 60	37@38	36@37
Caucho (Peruvian) ball....	84@ 85	50@ 51	48@49
Caucho (Peruvian) sheet...	.....	.....	.....

PLANTATION CEYLONS.

Fine smoked sheet.....	114@115	70@72	60@61
Fine pale crepe.....	107@108	67@68	52@54
Fine sheets and biscuits....	108@109	65@66	51@53

CENTRALS.

Emeralda, sausage	82@ 83	50@ 51	40@42
Guayaquil, strip .....	.....	none here	.....
Nicaragua, scrap	81a 82	50@ 51	40@41
Panama .....	.....	none here	.....
Mexican plantation, sheet...	.....	none here	.....
Mexican, scrap	80@ 81	48a 49	40@42
Mexican, slab .....	.....	none here	.....
Mangabeira, sheet .....	.....	.....	.....
Guayule	58@ 59	.....	.....
Balata, sheet	85@ 86	70@71	66@67
Balata, block	56a 57	50@ 51	45@46

AFRICAN.

Lopori, ball, prime.....	107@108	58@	50@
Lopori, strip, prime.....	.....	.....	.....
Aruwimi	100@101	45@ 47	40@42
Upper Congo, ball red.....	104@105	56a 58	45@46
Ikelemba .....	.....	.....	.....
Sierra Leone, 1st quality....	93@ 94	53a 54	45@46
Massai, red	95@ 96	.....	.....
Soudan Niggers .....	.....	.....	.....
Cameroon, ball	70@ 71	38@ 43	35@40
Benguela	74a 75	.....	.....
Madagascar, pinky .....	.....	.....	.....
Accra, flake	26@ 27	.....	.....

EAST INDIAN.

Assam .....	.....	none here	.....
Pontianak	6½a 6½g	6½a 6½g	6½a 6½g
Borneo .....	.....	none here	.....

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "There has not been much improvement in the market for commercial paper during September from the conditions prevailing in August, the demand continuing light and principally from out-of-town banks, with rates ruling at 6 per cent. for the best rubber names and 6½@6½ per cent for those not so well known."

NEW YORK PRICES FOR AUGUST. (New Rubber.)

	1913.	1912.	1911.
Upriver, fine	\$0.84@0.94	\$1.16@1.23	\$1.09@1.17
Upriver, coarse	51a 53	59a 96	95@ .99
Islands, fine .....	.74@ .81	1.06@1.13	1.02@1.09
Islands, coarse .....	.29a .33	.36a .59	.61@ .63
Cametá .....	.38@ .41	.64@ .68	.66@ .68

Statistics Para India Rubber (in Tons) Including Caucho.

STATISTICS FOR THE MONTH OF AUGUST.

	1913.	1912.	1911.	1910.
Receipts at Pará.....	1,400	200	1,600	1,870
Shipments to Liverpool..	520	130	690	710
Shipments to Continental Ports.....	200	50	250	270
Shipments to America...	820	230	1,050	830
American Imports.....	910	310	1,220	800
American Deliveries.....	900	300	1,200	860
Liverpool Imports.....	491	201	692	719
Liverpool Deliveries....	742	281	1,023	499
Continental Imports.....	110	170	280	170
Continental Deliveries..	120	170	290	170

VISIBLE SUPPLY—1ST SEPTEMBER, 1913.

	1913.	1912.	1911.	1910.
Stock in England, Pará 1st hands.....	704	730	3,150	1,018
Pará, 2nd hands.....	50			254
Caucho.....	454	320	630	670
Stock in Pará, 1st hands.....	450	110	170	330
2nd hands.....	190	10	250	280
Syndicate.....	810	1,260	2,620	
Stock in America.....	170	50	180	400
Stock on Continent.....	130	70	40	50
Afloat—Europe.....	420	60	730	650
Afloat—America.....	200	40	570	330
	2,994	884		

Total Visible Supply, including Caucho. 3,848 4,250 8,350 4,022

CROP STATISTICS—30TH JUNE, 31ST AUGUST, 1913.

	1912.	1913.	1912.	1911.	1910.
Pará Receipts.....	3,110	730	3,720	3,840	3,010
Pará Shipments to Europe.....	1,280	570	1,850	2,540	2,330
Pará Shipments to America.....	1,510	490	2,000	2,710	1,930
England Landings, net.....	1,408	2,176	1,877	1,972	
England Deliveries, net.....	2,013	2,496	3,197	2,043	
America Landings, net.....	2,410	2,480	2,600	1,570	
America Deliveries, net.....	2,370	2,470	2,500	1,460	
Continental Imports, net.....	340	770	310	340	
Continental Deliveries, net.....	460	800	380	340	

POSITION—1ST SEPTEMBER, 1913.

Decrease in Receipts during August, 1913, against August, 1912.....	300
Decrease in Receipts—New Crop, July/August, 1913, against 1912.....	120
Decrease in Deliveries—New Crop, July/August, 1913, England and Continent, against 1912.....	723
Decrease in Deliveries—New Crop, July/August, 1913, America, against 1912.....	100
Decrease in Visible Supply Pará Grades, against 1st September last year	402
Increase in Stock, England, August 31, 1913, against August 31, 1912..	158

WM. WRIGHT & CO., Brokers.

Liverpool, 3rd September, 1913.

During the month 210 tons have been shipped from Europe to America.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	Sept. 27, '13.
Old rubber boots and shoes—domestic.....	8¼ @ 9
Old rubber boots and shoes—foreign.....	8½ @ 8¾
Pneumatic bicycle tires.....	5 @ 5½
Automobile tires.....	8½ @ 8¾
Solid rubber wagon and carriage tires.....	8¾ @ 8¾
White trimmed rubber.....	10½ @ 10¾
Heavy black rubber.....	4½ @ 4½
Air brake hose.....	4½
Garden hose.....	1 @ 1¼
Fire and large hose.....	2 @ 2½
Matting.....	5½ @ 3¼
No. 1 white auto tires.....	9½ @ 9¾
Foreign auto tires.....	7½ @ 7¾

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA 1913.

[IN SHILLINGS AND PENCE PER POUND]

January 3, 1913.....	4/7¼	May 16.....	3/10
January 10.....	4/6½	May 23.....	3/9
January 17.....	4/6½	May 31.....	3/8½
January 24.....	4/5¼	June 6.....	3/9¼
January 31.....	4/4	June 13.....	3/9
February 7.....	4/2¾	June 20.....	3/8¾
February 14.....	4/3	June 27.....	3/9½
February 21.....	4/0½	July 4.....	3/9¾
February 28.....	4/0½	July 11.....	3/9
March 7.....	3/10¾	July 18.....	3/9¼
March 14.....	3/11¼	July 25.....	3/8
March 20.....	3/11	August 1.....	3/8½
March 28.....	3/9½	August 8.....	3/10
April 4.....	3/6¼	August 15.....	3/10½
April 11.....	3/4½	August 22.....	3/10
April 18.....	3/4¾	August 29.....	3/8½
April 25.....	3/4½	September 5.....	3/9
May 2.....	3/5½	September 12.....	3/8
May 9.....	3/8¾		

Liverpool.

WILLIAM WRIGHT & CO. REPORT, SEPTEMBER 1, 1913:

Fine Pará.—With small available stocks and a short interest, spot prices have been firm throughout the month, up to 3s. 10½d. [94 cents] paid, closing with sales at 3s. 9½d. [92 cents]. Stocks are small, and practically in the hands of a Bolivian importer. Quantities afloat and available for September are limited, so it is anticipated that prices will remain firm for that month. A fair business has been done for forward delivery at a considerable discount. With the prospects of a reduced crop one may anticipate that prices of Fine will continue to obtain a substantial premium on Plantation grades. Closing value: Hard Fine 3s. 9½d. [92 cents], September October 3s. 4½d. [82 cents].

Amsterdam.

JOOSTEN AND JANSSEN report [September 9]:

Altho competition was tame, the result of today's sale by inscription was satisfactory, 21,460 kilos having been sold of 25,400 kilos offered.

Rotterdam.

HAVELAR AND DE VRIES report [August 26]:

Sales appointed for September 9 included about 26½ tons, including 16,450 kilos *Hevea*, 7,590 kilos *Ficus*, balance *Castilloa*, Ceara and Congo.

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

AUGUST 25.—By the steamer *Clement* from Pará and Manaos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	94,500	17,400	66,700	22,800	201,400
General Rubber Co.....	39,600	5,600	25,300	200	70,700
Meyer & Brown.....	68,800	7,900	32,200	79,200	188,100
E. L. Maurer.....	25,000		22,400		22,400
Henderson & Korn.....	25,000		26,400	5,600	57,000
H. A. Astlett.....	28,900	12,100	42,900	6,700	90,600
Total.....	256,800	43,000	215,900	114,500	630,200

SEPTEMBER 2.—By the steamer *Stephen* from Pará and Manaos:

Arnold & Zeiss.....	42,700	8,000	13,800	21,300	85,800
General Rubber Co.....	57,600	8,200	56,500	300	122,600
Meyer & Brown.....	60,000	8,300	19,500	36,800	124,600
Henderson & Korn.....	31,800	7,800	31,000	17,500	88,100
H. A. Astlett & Co.....	7,100	3,900	39,600		50,600
F. Rosenstein & Co.....	6,300				6,300
Crossman & Sielcken.....		5,600	3,800	200	9,600
Total.....	205,500	41,800	164,200	76,100	487,600

SEPTEMBER 15.—By the steamer *Justin* from Pará and Manaos:

Arnold & Zeiss.....	205,500	65,100	96,400	79,900	446,900
General Rubber Co.....	158,700	26,900	27,100	2,300	215,000
Meyer & Brown.....	6,400	18,600	29,100	36,100	90,200
Henderson & Korn.....	32,100	3,900	35,000	3,400	74,400
H. A. Astlett & Co.....	400		11,900		12,300
G. Amsinck & Co.....	5,400	400	4,600	1,100	11,500
Total.....	408,500	114,900	204,100	122,800	850,300

IQUITOS.

H. A. Astlett & Co.....	8,600	8,600
Meyer & Brown.....	22,000	
Total.....	30,600	30,600

PARA RUBBER VIA EUROPE.

	POUNDS.
August 23.—By the <i>Merico</i> =Mexico:	
Harburger & Stack.....	2,000
G. Amsinck & Co.....	600
W. L. Wadleigh.....	800
H. Marquardt & Co.....	200
A. S. Lascelles.....	900
Mecke & Co.....	200
Various.....	2,000
August 25.—By the <i>Sarnia</i> =Frontera:	
E. Steiger & Co.....	1,000
W. L. Wadleigh.....	3,000
Various.....	4,000
August 25.—By the <i>Allianca</i> =Colon:	
G. Amsinck & Co.....	9,800
Broedermann & Litzrodt.....	700
Wessels, Kulenkampff & Co.....	400
Various.....	1,000
August 25.—By the <i>Zeeland</i> =Antwerp:	
Various.....	2,200
August 29.—By the <i>Monterey</i> =Mexico:	
E. Steiger & Co.....	2,000
L. Johnson & Co.....	1,500
General Export & Commission Co.....	1,000
G. Amsinck & Co.....	700
American Trading Co.....	500
August 29.—By the <i>Siberia</i> =Frontera:	
General Export & Commission Co.....	1,000
August 29.—By the <i>Colon</i> =Colon:	
G. Amsinck & Co.....	5,000
Stark & Co.....	1,000
Various.....	1,000
August 30.—By the <i>Rita</i> =Liverpool:	
Adolph Hirsch & Co.....	11,200
September 1.—By the <i>Imperator</i> =Bahia:	
Eggers & Heinlein.....	300
Broedermann & Litzrodt.....	800
September 2.—By the <i>Maracaibo</i> =Maracaibo:	
G. Amsinck & Co.....	400
Yglesias, Lobo & Co.....	300
September 2.—By the <i>Prinz Eitel Friedrich</i> =Colombia:	
Kunhardt & Co.....	2,000
September 2.—By the <i>Carl Schurz</i> =Colon:	
F. Lapiedra.....	3,000
Lawrence Import Co.....	500
September 2.—By the <i>Lapland</i> =Antwerp:	
Rubber & Guayule Agency.....	*11,200
September 6.—By the <i>Siamese Prince</i> =Bahia:	
Adolph Hirsch & Co.....	47,500
J. H. Rossbach & Bros.....	10,500
September 6.—By the <i>Morro Castle</i> =Mexico:	
G. Amsinck & Co.....	1,200
W. L. Wadleigh & Co.....	1,500
J. A. Medina & Co.....	300
G. A. Alden & Co.....	400
September 6.—By the <i>Adriatic</i> =Colon:	
Camacho Roldan & Van Sickle..	400
September 10.—By the <i>Trent</i> =Colon:	
A. M. Capen's Sons.....	3,000
J. S. Sambrada & Co.....	1,500
H. Wolff & Co.....	1,500
September 12.—By the <i>Panama</i> =Colon:	
G. Amsinck & Co.....	4,500
Harburger & Stack.....	800
United Export Co.....	2,000
W. R. Grace & Co.....	2,300
Lawrence Johnson & Co.....	3,500
Various.....	3,400
September 12.—By the <i>Sarnia</i> =Frontera:	
E. Steiger & Co.....	12,000
Hermann Kluge.....	2,000
W. L. Wadleigh.....	1,500
Various.....	1,000
September 12.—By the <i>Zacapa</i> =Colombia:	
G. Amsinck & Co.....	1,000
September 12.—By the <i>Esperanza</i> =Mexico:	
Hermann Kluge.....	6,000
Harburger & Stack.....	4,000
Murphy & Fultz.....	1,500
General Export & Com. Co.....	1,500
American Trading Co.....	1,000
Willard Hawes & Co.....	1,000
September 14.—By the <i>De Nederland</i> =Colombia:	
G. Amsinck & Co.....	600
Caballero & Blanco.....	300
Mecke & Co.....	300
September 17.—By the <i>Saturnus</i> =Colombia:	
Broedermann & Litzrodt.....	1,200
September 15.—By the <i>Florida</i> =Port Limon:	
Isaac Brandon & Bros.....	1,000
September 16.—By the <i>De Nederland</i> =Colon:	
G. Amsinck & Co.....	1,500
Andean Trading Co.....	4,000
Neuss Hesslein & Co.....	800
Isaac Brandon & Bros.....	700
September 18.—By the <i>Santiago</i> =Tampico:	
Various.....	*11,200

OTHER NEW YORK ARRIVALS.

CENTRALS.

	POUNDS.
August 23.—By the <i>Merico</i> =Mexico:	
Harburger & Stack.....	2,000
G. Amsinck & Co.....	600
W. L. Wadleigh.....	800
H. Marquardt & Co.....	200
A. S. Lascelles.....	900
Mecke & Co.....	200
Various.....	2,000
August 25.—By the <i>Sarnia</i> =Frontera:	
E. Steiger & Co.....	1,000
W. L. Wadleigh.....	3,000
Various.....	4,000
August 25.—By the <i>Allianca</i> =Colon:	
G. Amsinck & Co.....	9,800
Broedermann & Litzrodt.....	700
Wessels, Kulenkampff & Co.....	400
Various.....	1,000
August 25.—By the <i>Zeeland</i> =Antwerp:	
Various.....	2,200
August 29.—By the <i>Monterey</i> =Mexico:	
E. Steiger & Co.....	2,000
L. Johnson & Co.....	1,500
General Export & Commission Co.....	1,000
G. Amsinck & Co.....	700
American Trading Co.....	500
August 29.—By the <i>Siberia</i> =Frontera:	
General Export & Commission Co.....	1,000
August 29.—By the <i>Colon</i> =Colon:	
G. Amsinck & Co.....	5,000
Stark & Co.....	1,000
Various.....	1,000
August 30.—By the <i>Rita</i> =Liverpool:	
Adolph Hirsch & Co.....	11,200
September 1.—By the <i>Imperator</i> =Bahia:	
Eggers & Heinlein.....	300
Broedermann & Litzrodt.....	800
September 2.—By the <i>Maracaibo</i> =Maracaibo:	
G. Amsinck & Co.....	400
Yglesias, Lobo & Co.....	300
September 2.—By the <i>Prinz Eitel Friedrich</i> =Colombia:	
Kunhardt & Co.....	2,000
September 2.—By the <i>Carl Schurz</i> =Colon:	
F. Lapiedra.....	3,000
Lawrence Import Co.....	500
September 2.—By the <i>Lapland</i> =Antwerp:	
Rubber & Guayule Agency.....	*11,200
September 6.—By the <i>Siamese Prince</i> =Bahia:	
Adolph Hirsch & Co.....	47,500
J. H. Rossbach & Bros.....	10,500
September 6.—By the <i>Morro Castle</i> =Mexico:	
G. Amsinck & Co.....	1,200
W. L. Wadleigh & Co.....	1,500
J. A. Medina & Co.....	300
G. A. Alden & Co.....	400
September 6.—By the <i>Adriatic</i> =Colon:	
Camacho Roldan & Van Sickle..	400
September 10.—By the <i>Trent</i> =Colon:	
A. M. Capen's Sons.....	3,000
J. S. Sambrada & Co.....	1,500
H. Wolff & Co.....	1,500
September 12.—By the <i>Panama</i> =Colon:	
G. Amsinck & Co.....	4,500
Harburger & Stack.....	800
United Export Co.....	2,000
W. R. Grace & Co.....	2,300
Lawrence Johnson & Co.....	3,500
Various.....	3,400
September 12.—By the <i>Sarnia</i> =Frontera:	
E. Steiger & Co.....	12,000
Hermann Kluge.....	2,000
W. L. Wadleigh.....	1,500
Various.....	1,000
September 12.—By the <i>Zacapa</i> =Colombia:	
G. Amsinck & Co.....	1,000
September 12.—By the <i>Esperanza</i> =Mexico:	
Hermann Kluge.....	6,000
Harburger & Stack.....	4,000
Murphy & Fultz.....	1,500
General Export & Com. Co.....	1,500
American Trading Co.....	1,000
Willard Hawes & Co.....	1,000
September 14.—By the <i>De Nederland</i> =Colombia:	
G. Amsinck & Co.....	600
Caballero & Blanco.....	300
Mecke & Co.....	300
September 17.—By the <i>Saturnus</i> =Colombia:	
Broedermann & Litzrodt.....	1,200
September 15.—By the <i>Florida</i> =Port Limon:	
Isaac Brandon & Bros.....	1,000
September 16.—By the <i>De Nederland</i> =Colon:	
G. Amsinck & Co.....	1,500
Andean Trading Co.....	4,000
Neuss Hesslein & Co.....	800
Isaac Brandon & Bros.....	700
September 18.—By the <i>Santiago</i> =Tampico:	
Various.....	*11,200

AFRICAN.

August 25.—By the <i>St. Louis</i> =Southampton:	
Arnold & Zeiss.....	11,000
August 25.—By the <i>Cedric</i> =Liverpool:	
Various.....	2,200
August 27.—By the <i>De Nederland</i> =Ham-	
burg:	
Meyer & Brown.....	22,200
General Rubber Co.....	6,500
Arnold & Zeiss.....	15,000
Various.....	58,900
August 25.—By the <i>Kaiserin Auguste Victoria</i> =Hamburg:	
Wallace L. Gough.....	18,000
Various.....	18,500
August 27.—By the <i>De Nederland</i> =Ham-	
burg:	
Meyer & Brown.....	50,000
August 26.—By the <i>Vaderland</i> =Antwerp:	
Meyer & Brown.....	4,500
Various.....	37,000
August 27.—By the <i>De Nederland</i> =Ham-	
burg:	
Various.....	11,000
August 30.—By the <i>De Nederland</i> =Ham-	
burg:	
Various.....	12,000
September 2.—By the <i>Lapland</i> =Antwerp:	
Rubber & Guayule Agency.....	6,000
September 4.—By the <i>Pennsylvania</i> =Ham-	
burg:	
Various.....	12,000
September 5.—By the <i>Adriatic</i> =Liverpool:	
Meyer & Brown.....	7,000
Various.....	13,500
September 9.—By the <i>Zeeland</i> =Antwerp:	
Various.....	2,200

SEPTEMBER 11.—By the <i>Patricia</i> =Hamburg:			
Arnold & Zeiss.....	3,500		
Ed. Maurer	3,000		
Rubber & Guayule Agency.....	6,000	12,500	

SEPTEMBER 13.—By the <i>Celtic</i> =Liverpool:			
Meyer & Brown.....		15,000	

SEPTEMBER 15.—By the <i>Amerika</i> =Hamburg:			
Ed. Maurer		8,500	

SEPTEMBER 19.—By the <i>Metz</i> =Havre:			
Various		5,000	

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

AUGUST 25.—By the <i>St. Louis</i> =Southampton:			
Meyer & Brown.....	*42,500		
N. Y. Commercial Co.....	*67,200		
Arnold & Zeiss.....	*22,500		
Robinson & Co.....	*8,500	*135,700	

AUGUST 25.—By the <i>Nordam</i> =Amsterdam:			
Meyer & Brown.....	*23,000		
Arnold & Zeiss.....	*16,000		
Rubber Trading Co.....	*16,000		
Robert Badenhop	*2,200		
Various	*12,000	*69,200	

AUGUST 25.—By the <i>Minnetonka</i> =London:			
Meyer & Brown.....	*43,000		
Ed. Maurer	*30,000		
J. T. Johnstone.....	*33,500		
C. T. Wilson.....	*22,500		
Lunham & Moore.....	*22,500		
Wallace L. Gough.....	*10,000		
General Rubber Co.....	*145,000		
Adolph Hirsch & Co.....	*8,500		
L. Littlejohn & Co.....	*22,500		
Henderson & Korn.....	500		
Various	*22,500	*360,500	

AUGUST 26.—By the <i>Chicago</i> =Havre:			
Michelin Tire Co.....		*22,500	

AUGUST 26.—By the <i>Vaderland</i> =Antwerp:			
Meyer & Brown.....		*80,000	

AUGUST 26.—By the <i>St. Peter</i> =Singapore:			
Ed. Maurer	*78,500		
Malaysian Rubber Co.....	*11,200		
E. Boustead & Co.....	*5,000		
Henderson & Korn.....	*92,500		
L. Littlejohn & Co.....	*36,000		
Various	*32,600	*255,800	

AUGUST 27.—By the <i>Indrakuala</i> =Singapore:			
Henderson & Korn.....	*45,000		
Malaysian Rubber Co.....	*22,500	*67,500	

AUGUST 28.—By the <i>Majestic</i> =Southampton:			
Meyer & Brown.....	*52,500		
Arnold & Zeiss.....	*100,000		
Various	*56,000	*208,500	

AUGUST 29.—By the <i>Patricia</i> =Colonbo:			
Meyer & Brown.....	*22,500		
Ed. Maurer	*45,000		
N. Y. Commercial Co.....	*38,000		
Various	*4,500	*110,000	

AUGUST 30.—By the <i>Baltic</i> =Liverpool:			
General Rubber Co.....	*235,000		
Various	3,500	*238,500	

SEPTEMBER 2.—By the <i>Minneapolis</i> =London:			
Meyer & Brown	*21,000		
Arnold & Zeiss.....	*67,000		
Adolph Hirsch & Co.....	*4,500		
James T. Johnstone.....	*6,000		

C. T. Wilson.....	*2,200		
General Rubber Co.....	*10,000		
Rubber & Guayule Agency.....	*3,000		
Various	*3,000	*116,700	

SEPTEMBER 4.—By the <i>Lafayette</i> =Antwerp:			
Meyer & Brown.....	*75,000		
Arnold & Zeiss.....	*33,500		
Rubber & Guayule Agency.....	*10,000		
General Rubber Co.....	*22,500		
Rubber Trading Co.....	*12,500	*173,500	

SEPTEMBER 2.—By the <i>Philadelphia</i> =Southampton:			
Arnold & Zeiss.....	*13,500		
Rubber Trading Co.....	*7,500		
Raw Products Co.....	*5,500		
Henderson & Korn.....	*4,500		
W. Stiles	*11,200		
Meyer & Brown.....	*8,000		
C. T. Wilson.....	*60,000		
Various	*157,000	*267,200	

SEPTEMBER 2.—By the <i>Ryndam</i> =Amsterdam:			
Robert Badenhop		*5,000	

SEPTEMBER 3.—By the <i>Oceanic</i> =Southampton:			
Meyer & Brown.....	*4,500		
W. Stiles	*3,500		
Robinson & Co.....	*15,500		
N. Y. Commercial Co.....	*22,500		
Various	*16,500	*62,500	

SEPTEMBER 3.—By the <i>Carmania</i> =Liverpool:			
Various		*6,000	

SEPTEMBER 4.—By the <i>Rhynjels</i> =Colonbo:			
Meyer & Brown.....	*117,000		
N. Y. Commercial Co.....	*52,000		
Ed. Maurer	*9,000		
Various	*11,200	*189,200	

SEPTEMBER 5.—By the <i>Wray Castle</i> =Singapore:			
Meyer & Brown.....	*17,000		
Ed. Maurer	*50,000		
James T. Johnstone.....	*15,000		
Malaysian Rubber Co.....	*22,500		
Ed. Boustead	*30,000		
L. Littlejohn & Co.....	*11,200		
Henderson & Korn.....	*22,500		
Various	*20,000	*188,200	

SEPTEMBER 8.—By the <i>New York</i> =Southampton:			
Meyer & Brown.....	*17,500		
W. Stiles	*3,500		
Robinson & Co.....	*11,200		
Rubber Trading Co.....	*7,000		
Raw Product Co.....	*1,500		
New York Commercial Co.....	*20,000		
Arnold & Zeiss.....	*33,500		
C. T. Wilson.....	*56,000		
Goodyear Tire & Rubber Co.....	*35,000		
Ed. Maurer	*3,500	*188,700	

SEPTEMBER 8.—By the <i>Katharine</i> =Amsterdam:			
Manhattan Rubber Mfg. Co.....		*7,000	

SEPTEMBER 8.—By the <i>Manhattan</i> =London:			
Meyer & Brown.....	*139,500		
Adolph Hirsch & Co.....	*4,500		
General Rubber Co.....	*157,000		
L. Littlejohn & Co.....	*11,200		
Rubber & Guayule Agency.....	*11,200		
Ed. Maurer	*4,000	*327,400	

SEPTEMBER 11.—By the <i>Zeyher</i> =Antwerp:			
Meyer & Brown.....	*100,000		
Arnold & Zeiss.....	*90,000	*190,000	

SEPTEMBER 10.—By the <i>Olympic</i> =Southampton:			
Arnold & Zeiss.....	*224,000		
Meyer & Brown.....	*36,000		
Robinson & Co.....	*3,500		

C. T. Wilson.....	*8,500		
Rubber Trading Co.....	*5,500		
Ed. Maurer	*3,500		
Various	*17,500	*298,500	

SEPTEMBER 11.—By the <i>Patricia</i> =Hamburg:			
Arnold & Zeiss.....	*7,000		
Ed. Maurer	*7,500		
Rubber & Guayule Agency.....	*18,500		
Various	*20,000	*53,000	

SEPTEMBER 11.—By the <i>Socstyk</i> =Amsterdam:			
Various		*3,000	

SEPTEMBER 13.—By the <i>Kafue</i> =Colonbo:			
Meyer & Brown.....	*94,000		
Ed. Maurer	*30,000		
W. R. Grace & Co.....	*70,000		
H. W. Peabody & Co.....	*3,500	*197,500	

SEPTEMBER 15.—By the <i>Amerika</i> =Hamburg:			
Various		*25,000	

SEPTEMBER 15.—By the <i>Minnewaska</i> =London:			
Meyer & Brown.....	*7,600		
Rubber & Guayule Agency.....	*7,000		
James T. Johnstone.....	*35,000		
C. T. Wilson.....	*75,000		
General Rubber Co.....	*350,000		
Various	*11,200	*485,800	

SEPTEMBER 15.—By the <i>St. Paul</i> =Southampton:			
Meyer & Brown.....	*52,000		
Arnold & Zeiss.....	*80,000		
Rubber Trading Co.....	*3,500		
W. Stiles	*9,000		
Ed. Maurer	*6,000		
Various	*12,500	*163,000	

SEPTEMBER 16.—By the <i>Kroonland</i> =Antwerp:			
Meyer & Brown.....	*17,000		
Arnold & Zeiss.....	*11,200	*28,200	

SEPTEMBER 18.—By the <i>Majestic</i> =Southampton:			
Meyer & Brown.....	*12,600		
Arnold & Zeiss.....	*45,000		
Robinson & Co.....	*11,200		
New York Commercial Co.....	*35,000		
Goodyear Tire & Rubber Co.....	*7,000	*110,800	

BOSTON ARRIVALS.

IMPORTS IN AUGUST, 1913.

	Pounds.	Value.
Gutta-jelutong (Pontianak)....	2,346,144	\$108,150
Gutta-percha	4,674	694
India-rubber	14,494	6,727

CUSTOM HOUSE STATISTICS.

DISBURSED AT NEW YORK—AUGUST, 1913.

Imports:	Pounds.	Value.
India-rubber	8,679,222	\$5,018,712
Balata	143,038	74,498
Guayule	141,728	32,082
Gutta-percha	1,689	1,290
Gutta-jelutong (Pontianak)...	2,098,715	96,983
Total	11,064,392	\$5,223,565
Exports:		
India-rubber	60,506	\$37,303
Balata	36,019	22,977
Guayule	1,702	1,243
Gutta-percha		
Reclaimed rubber	94,914	16,369
Gutta-jelutong (Pontianak)...		
Rubber scrap, imported.....	2,088,458	184,671
Rubber scrap, exported.....	201,595	33,907



Vol. 49.

OCTOBER 1, 1913.

No. 1.

TABLE OF CONTENTS.

EDITORIAL:

In Our Twenty-Fifth Year.....	1
The Great Economy of Larger Tires	1
Reasons for the Drop in Rubber Prices.....	2
The Business of Stealing Rubber.....	3
Will Eastern Planters Try a Corner?.....	3
How Planting Successful in Mexico.....	4
New Work for Motorcycle Tires.....	4
Gaining Better Mileage from the Motor Truck.....	5
Amazon Rubber Shipments for 1912 and 1913.....	6
Para Rubber in Mexico.....	7
<i>By J. C. Harvey</i>	
A New Castilloa Tapping Knife.....	10
[With 4 Illustrations.]	
Rubber Importers as Planters.....	10
[With 2 Illustrations.]	
The Plastometer—A Rubber Testing Machine.....	11
[With 1 Illustration.]	
<i>By R. Denver Coppage</i>	
The Sico Yield Gauge.....	12
[Illustrated.]	
Automatic Automobile Tire Pump.....	12
[Illustrated.]	
Two New Solid Tire Machines.....	13
[With 3 Illustrations.]	
Some Rubber Problems.....	14
A New Sticking Process.....	14
[With 2 Illustrations.]	
A Rubber Exposition in California.....	15
[With Portrait of Dr. Dahne.]	
The Rubber Trade in Akron.....	16
<i>Our Correspondent</i>	
The Rubber Trade in Boston.....	17
<i>Our Correspondent</i>	
The Rubber Trade in Rhode Island.....	18
<i>Our Correspondent</i>	
The Rubber Trade in San Francisco.....	19
<i>Our Correspondent</i>	
New Home of the Rubber Club of America.....	19
[Illustrated.]	
The 1913 Year Book of the Rubber Club.....	19
Some Interesting Correspondence on Rubber Stealing.....	20
First Rubber Shoes Made in America.....	21
[With 2 Illustrations.]	
Rubber Quarter-Tips on Leather Heels and Soles.....	22
[With 5 Illustrations.]	
The Obituary Record.....	23
[With Portraits of Capt. F. H. Hunicke and Henry P. Moorhouse.]	
Treatment of Rubber Sponges.....	24
News of The American Rubber Trade.....	25
[With 5 Illustrations.]	
New Trade Publications.....	32
[Illustrated.]	
Editor's Book Table.....	33
New Rubber Goods in the Market.....	34
[With 5 Illustrations.]	
New Rubber Caps and Coats for Fall.....	35
[With 5 Illustrations.]	
Results of Various Coagulants.....	36
India Rubber Trade in Great Britain.....	37
<i>By Our Regular Correspondent</i>	
Some Rubber Interests in Europe.....	38
The Originator of "Tuck's Packings".....	39
Notes from British Guiana.....	40
<i>By Our Regular Correspondent</i>	
Rubber Congress in Para.....	41
Congress for Development of the Amazon Country.....	41
Rubber Planting in Cochin-China.....	42
<i>By Our Regular Correspondent</i>	
Some Rubber Planting Notes.....	43
The Quality of Plantation Rubber.....	44
Rubber in the French Congo.....	44
Rubber in German East Africa.....	45
Recent Patents Relating to Rubber.....	46
[United States, Great Britain, France, Germany, Belgium.]	
Report of the Crude Rubber Market.....	48

Antwerp.

RUBBER STATISTICS FOR AUGUST.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, July 30..Kilos	1,034,599	434,311	465,734	519,965	524,512
Arrivals in August					
Congo sorts	225,238	262,846	299,703	338,797	147,313
Other sorts	3,968	1,000	49,906	34,574	49,199
Plantation sorts ...	171,555	167,303	46,532	49,875	32,748
Aggregating	1,435,360	869,360	861,875	943,211	753,772
Sales in August.....	841,891	393,788	339,474	406,651	508,921
Stocks, August 31....	593,469	475,572	522,401	536,560	244,851
Arrivals since Jan. 1—					
Congo sorts	2,040,981	1,976,790	2,140,816	2,139,120	2,325,028
Other sorts	104,540	95,728	318,649	244,781	660,121
Plantation sorts....	1,318,015	837,342	420,749	374,452	177,535
Aggregating	3,463,536	2,909,860	2,880,214	2,758,353	3,162,684
Sales since Jan. 1....	3,381,127	3,108,826	2,946,025	2,763,303	3,513,568

RUBBER ARRIVALS FROM THE CONGO.

AUGUST 27.—By the steamer *Anversville*:

Bunge & Co.....	(Société Générale Africaine) Kilos	27,000
do	(Belgika)	5,100
do	(Comp. Commercial Congolais)	31,200
do	(Cie. du Congo belge)	2,000
do	(Forminière)	1,600
do		4,000
Société Coloniale Anversoise.....	(H. C.)	385
do	(Lomami)	6,500
do	(Comminière)	12,600
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde S. A.).....	(Comfina)	21,300
do	(Creveld)	6,400
Charles Dethier	(American Congo Cy)	10,300
		128,385

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

(From January 1 to August 18, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain.....pounds	3,879,866	7,127,486
To United States.....	2,090,076	3,814,932
To Belgium	697,682	2,114,687
To Australia	116,159	321,249
To Germany	101,075	138,152
To Austria	27,577	27,946
To Japan	18,509	151,572
To Canada	16,065	.....
To Italy	5,885	36,507
To Holland	2,282	992
To France	1,915	.....
To India	100	881
To Straits Settlements.....	.....	20,064
To Norway and Sweden.....	39	.....
Total	6,957,230	13,754,468

(Same period 1911, 3,128,993; same 1910, 1,511,275.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 1,268,353 lb.—970,353 lb. from the Straits and 297,818 lb. from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon Rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon Rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

	Singapore.	Penang.	Port Swet-	
To—	Aug. 13.	July 31.	tenham.	Total.
Great Britain, pounds	11,073,394	7,849,600	13,826,506	32,749,500
Continent	133,133	56,400	1,758,619	1,948,152
Japan	549,854	.....	.....	549,854
Ceylon	17,981	144,800	807,421	970,202
United States	3,547,619	171,733	.....	3,719,352
Australia	49,200	.....	.....	49,200
Total	15,371,181	8,222,533	16,392,546	39,986,260
Same period, 1912...	7,989,565	4,798,834	10,766,596	23,554,995
Same period, 1911...	3,606,381	2,577,465	6,795,266	12,979,112
Same period, 1910...	1,968,181	1,270,571	4,706,124	7,944,876

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 The Merchants Rubber Co., Limited, Berlin, Ont.
 The Berlin Rubber Manufacturing Co., Limited, Berlin, Ont.
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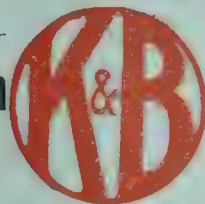
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TABLE OF CONTENTS ON LAST PAGE OF READING.

IS SINGAPORE TO BE THE FUTURE RUBBER MARKET?

THERE appears on another page in this issue a letter from Singapore setting forth the claims of that port to be considered the rubber shipping market of the world. Our correspondent has been prominent in rubber circles of the Federated Malay States for a good many years and is thoroughly familiar with the ground he covers. He estimates that in the year 1914 the Malayan rubber yield will be 55,000 tons, in 1915 75,000 tons, and that by 1917 or 1918 the Malayan product will equal 140,000 tons. He then proceeds to show by means of comparative tables of cost, in which he goes much into detail, that it would be greatly to the advantage of American rubber importers—even at the present time—to buy plantation rubber direct from Singapore rather than from London.

According to the figures, which he has prepared with obvious care, there would be a saving to the New York buyer of 2 per cent.—or, in other words, he would be able to buy rubber in Singapore and have it delivered in New York at its present cost of delivery in London—thereby saving all the extra

freight charges and the various handling expenses now added to the cost because of re-shipment.

There would also be the great advantage, which has been repeatedly pointed out in these columns, of receiving the rubber in New York in its original cases, for, as our correspondent states: "All the rubber purchased in London for America is mixed up, and one lot may consist of breaks from Ceylon, Straits, Borneo, and Sumatra, etc., all different climates; and the rubber, altho exact in appearance, will give quite different reactions. By purchase here (Singapore), the consumer would know even the estate every parcel came from."

The planters would profit by these direct shipments quite as much as the New York importers, and, with the exception of those who are under long-time agreements with London agents, they are very anxious to make this direct connection. As the shipment of plantation rubber direct to New York would be profitable both to the American buyers and to the Middle East sellers (the only obstacle standing in its way being the tradition that London is the gateway of the East), it is a foregone conclusion that the planters and the importers will very soon come to an understanding and rubber be shipped direct from Singapore to New York. It is a clear case where the middleman no longer serves any useful purpose. He has lost his *raison d'être*.

A LOOSE PIECE OF LEGISLATION

FROM the days of Moses down to Solon and from Solon down to the present time the making of laws has always been thought to belong to superior minds of exceptional wisdom; and that is the reason why our members of Congress are so carefully selected with reference to their ripe intelligence. But in the hurry and stress of Washington life occasionally a piece of legislation goes through the halls of Congress that fills the lay mind with wonderment if not with consternation. Such a bill has recently been passed. It is known as the Kahn law. Its purpose is to protect foreign exhibitors at the San Francisco Fair in their ownership of patents, copyrights and trade-marks; and in its endeavor to throw ample protection about this foreign ownership it distinctly endangers the rights of the American manufacturer, and unless amended constitutes a grave menace.

It provides that the Librarian of Congress and the Commissioner of Patents shall establish a branch office at the fair where "the proprietor of any certificate of

registration, copyright, trade-mark, or patent issued by any foreign government protecting any pattern, model, design, copyright, trade-mark, or manufactured article imported for exhibition and exhibited at said Panama-Pacific International Exposition may, upon presentation of satisfactory proof of said proprietorship, obtain without charge a certificate from said branch office, which shall be legal evidence of such proprietorship."

Then it continues in the next section as follows: "It shall be unlawful for any person without authority of the proprietor thereof to copy, imitate, reproduce, or republish any pattern, model, design, trade-mark, copyright, or manufactured article protected by the laws of any foreign country by registration, copyright, patent, or otherwise, which shall be imported for exhibition at the Panama-Pacific International Exposition and there exhibited; and any person who shall infringe the rights protected under this Act shall be liable"—to injunction; to damages; to confiscation of his goods; and, finally, to fine and imprisonment.

It is a well-known fact that not a few foreign governments grant certificates of trade-mark, patent, etc., to applicants without making any proper examination of the merits of the application. It would be very possible for foreign exhibitors to come to the fair with goods protected by their own home copyright or patent—and consequently under this law protected in this country—tho their goods were direct imitations of goods made in this country without any protection. So that an American manufacturer who had been making a certain line of articles for many years might be held liable for infringement, with all the attendant penalties, for the continuance of such manufacture, simply because some exhibitor from abroad, who had copied these American goods, had secured from his own government a certificate of patent or copyright.

Here is a law that obviously is in need of amendment, and it is hoped that some alert member of Congress will make such a move forthwith. The National Registration League of Philadelphia has taken the matter up and is bringing it to the attention of American manufacturers. Anyone who desires a copy of this remarkable law (No. 7595) can secure it from that league.

SELF INTEREST THE BEST PROMOTER OF EFFICIENCY.

PROBABLY every considerable business man, whether manufacturer or distributor, has been approached a great many times during the last five or six

years by the "Efficiency Expert," or by his representative. It is a very alluring story which they have to tell—larger production with fewer hands, bigger output at a lower cost, increased income, decreased outgo.

It is not to be wondered at that a good many men have succumbed and have invited the efficiency expert to come in and do his utmost. Some concerns have undoubtedly been benefitted. Here and there a business house may be found, that has come down from father to son, that is still moving in the footsteps of the founders and that has become generally fossilized. Here any sort of modernizer who will come in and scrape off the barnacles will prove helpful. But there are not many such instances. As a rule, business men aim to be abreast of the times and intend to have their equipment as modern as that of their competitors. At least, this is certainly the situation among rubber manufacturers.

The efficiency expert appeals for employment on the theory that anyone who comes in from the outside enters without prejudice or bias, and therefore is able to judge everything and everybody purely on merit. But this very ignorance of the special case is often the obstacle on which the expert comes to grief. He does not have time to get thoroughly acquainted with the situation or to diagnose the individual case. He goes through the mill, takes copious notes, carries them back to the office, and then they are discussed by himself and his associates. They probably have all business enterprises classified under certain heads, and they finally decide that the concern under consideration belongs to, let us say, Group B, and therefore they prescribe for it some Group B medicine, which may act as a cure, or may act quite in the contrary direction.

After all is said and done, the best promoter of efficiency is self-interest, where each man stands on his own feet, and is paid according to the work he individually does. Where he is rewarded in proportion to his productive power he can be relied upon, as a rule, not to waste much of his energy in futile motions. If a man is going to get \$4 a day anyway, irrespective of what he produces during that time, he is liable to get into the habit of watching the clock for the day to end. But where his day means to him \$3, or with twice the application of energy and brains \$6, the greater application is likely to be forthcoming. Of course, this system of piece work is not applicable in clerical departments, but in manufacturing it generally is applicable, and, taken all in all, it is undoubtedly the best promoter of genuine efficiency yet devised.

WHAT THAT PNEUMATIC SUBSTITUTE MUST HAVE. WILL AMERICAN COTTON ALWAYS BE SUPREME?

A TECHNICAL contemporary, in discussing that ever interesting subject, "A substitute for the present pneumatic tire," remarks that "the seeker for a substitute for the pneumatic tire must find something as light as air, as resilient as air, as durable as air, and as free of cost as air."

Now that is rather a hard "stunt," even for the indefatigable and irrepressible inventor. If he must find something as light as air his quest is obviously restricted to matter not only in gaseous form, but of a particularly light gaseous form; and if the only substitute permissible is something that is absolutely without cost—for up to the present time air has not been brought under any modernized system of financial control—his problem is certainly a puzzler, and the substitute seeker might as well give up the quest.

But is it essential that this sought-for substitute should be as light as air? Air is nearly eight hundred times lighter than water, and a substitute might weigh one hundred times as much as air and yet not add more than three or four pounds' weight to an automobile tire of the usual size—in other words, not more than 15 or 20 pounds to the entire weight of the car. This certainly does not appear, on the face of it, like an insurmountable difficulty. Moreover, it seems quite possible that a substitute might be discovered that was even a little more expensive than air and still be available. Suppose this substitute, instead of costing nothing, increased the cost of a tire a dollar—or let us be altogether reckless and say five dollars—would that necessarily bar it, provided it proved in other respects an improvement on air?

As a matter of fact, the question of added weight and added expense, assuming that both are within reasonable limits, is not a serious one. The seeker after a pneumatic substitute has just two things to keep in mind: First, resiliency equal to air (for it is safe to assume that auto riders would not care to sacrifice any of their present comfort), and second, greater service for the cost than a pneumatic gives. He may attain this desideratum either by greater durability at the same cost or the same durability at a lower cost; and, of course, if he can secure both of these conditions—that is, more service with less cost—his solution will be doubly satisfactory. The problem is a difficult enough one even when reduced to its simplest terms, without cumbering it with any unnecessary complications.

AMERICANS have felt quite free to criticise Brazil for the comfortable assurance it has complacently entertained all these years that its rubber would always remain supreme, irrespective of the efforts of the rest of the world to push into the rubber market. The Brazilians have at last seen their mistake, but they did not see it until the production of rubber from the East and other parts of the world had equaled that of the Amazon. Now the question is—Are Americans in a somewhat similar position in regard to cotton? We have rested content for many years in an imperturbable confidence that America in the cotton field would never have a rival. But is this confidence warranted? The cotton production for the current year is estimated at 12 billion pounds, or 24 million bales. About two-thirds of this production, or approximately 16 million bales, will be produced on American soil. This still shows a good lead, and there is the additional fact that, taking one year with another, the American production is steadily increasing; but over against this reassuring situation is the incontrovertible fact that foreign production of cotton is increasing vastly faster. In India, for instance, the cotton production in 1910 amounted to 1,400,000 bales. The present year it will reach the very sizable figure of 6,000,000 bales, or an increase of over 300 per cent. in three years. The Middle East has one tremendous advantage over both Brazil and the United States—its great supply of extremely cheap labor. This is what is likely to prove the undoing of Brazil in the rubber market. Will it also prove the undoing of America in the cotton market?

To be sure this is not just at this moment a pressing question, but it is certainly an interesting one.

THE PERSISTENCE OF RUBBER.

IT cannot be said that rubber is imperishable, because of course it can be worn out in time; but it is certainly extremely persistent and clings to its identity with a tenacity displayed by very few materials—a fact that is brought to mind with considerable frequency. The following paragraph recently appeared in one of the New York State daily papers: "The Hospital Guild makes an appeal for gifts of old rubber of every description—tires, garden hose, shoes, water bags, etc., to be sold for the benefit of the hospital."

Similar paragraphs appear quite frequently in the press of smaller communities, showing that the collection of old rubber articles for the assistance of various charitable institutions is not an uncommon practice. Now no one ever heard of a hospital or similar institution asking friends to bring collections of old shoes, rimless or crownless hats or punctured tin pails, for all these useful commodities when once worn out have served their full purpose and have no further worth; but if an article is made of rubber it may be worn out and useless in that particular capacity, but the rubber it contains still remains of value. So while these discarded tires, worn-out shoes, broken water bags and punctured pieces of garden hose have in themselves no recuperative properties which may be applied to the patients in the hospital wards, they can be turned over to the collector of old rubber and the proceeds devoted to the worthy work of healing. Rubber is perhaps not exactly like the proverbial kind word that "never dies," but it assuredly dies hard, and is capable of a number of resuscitations before its final demise. It would be interesting for some actively imaginative person to trace the career of a given piece of rubber through its various transmutations—first as an inner tube on a \$5,000 Limousine, then as a rubber ball which the small boy can play with, then as a piece of soling for a young woman's foot-hold, and finally as a rubber mat for everybody to shuffle over.

Very few people realize to what an enormous extent old rubber is re-used, and probably, as far as the general consumer is concerned, it is just as well not to tell him. He might get the idea that no new rubber was used at all. Some people, unfortunately, already have this impression, which, however, can readily be dissipated by simply asking the question—What, then, becomes of the 50,000 tons of crude rubber used in the United States each year?

WHERE CEYLON HAS THE ADVANTAGE OF BRAZIL.

BRAZIL and Ceylon have one point in common—rubber is an important product of each. But there the similarity stops, for the great staple of Brazil is coffee, and of Ceylon, tea. Both countries have been confronted with the same danger—the overproduction of their staples. Ceylon has met the situation very successfully by converting into rubber plantations much of the land which formerly it was thought could not be profit-

ably utilized except for tea. The exports of tea in 1907 amounted to 182,000,000 pounds, and in 1911 to 186,000,000 pounds, an increase so slight as to be negligible. The price in the meantime advanced from 41½ cents (Ceylon currency) to 45½ cents a pound. The exports of rubber during those four years grew rapidly. The Ceylonese are most fortunate, for as fast as their tea threatens to outstrip the demand they forthwith change to the production of rubber.

But the situation in Brazil is different. Overproduction of coffee is not only a menace but an actuality. If the Brazilians could only transform some of their coffee lands into rubber plantations, the problem would be solved; but unfortunately they can't, for their rubber comes from the North and their coffee from the South, and they have little in common beyond being both Brazilian.

So there is where Ceylon has the advantage.

ONE OF THE DAILY PAPERS RECENTLY PUBLISHED THE STATEMENT that the rubber manufacturers of Akron were turning out 20,000 automobile tires each day, and added that this was one-half of the product of the United States. If Akron is really turning out 20,000 automobile tires regularly every day and disposing of them, the situation for the tire manufacturers outside of Akron is certainly a hard one, because their factories must shut down forthwith, for a daily output of 20,000 tires (which would aggregate 6,000,000 tires a year) would supply the entire American market. The annual consumption of automobile tires, including all kinds, pneumatic and solid, has never yet reached 6,000,000, but it probably will during the present year. However, it is hardly necessary to quarrel on this issue with our contemporary. It is not necessary to characterize the statement as inaccurate, but only as a little premature, for undoubtedly within the next two or three years Akron will be making 20,000 tires a day, and with plenty of work left for the other manufacturers. Of course, we cannot tell yet what effect Mr. Wilson's new tariff, with its reduction of duty on rubber manufactures from 35 to 10 per cent., will have; but in view of the fact that American manufacturers have been exporting tires in greater number every year until with the fiscal year ending last June the value of these exports had reached \$4,000,000, there seems to be a comfortable assurance that our tire makers will be able to take care of themselves, notwithstanding the fact that the new tariff will open the doors fairly wide to foreign importations.

The Story of the Pará Congress.

By Our Special Correspondent

[The September and October numbers of THE INDIA RUBBER WORLD contained brief descriptions of the important Congress for the Economic Defense of the Amazons. The proceedings in detail, with adequate illustrations, are now presented by our special correspondent.]

THE members of the Congress for the Economic Defense of the Amazons being assembled at Pará, Dr. Eneas Martins, honorary president, declared the congress duly opened. On the platform, with his Excellency the Governor, were, to his right, Dr. Augusto Borborema, president of the State Senate, and Mr. J. Simao da Costa, representing the Ministry of Agriculture; and on the left, Dr. J. Ferreira Teixeira, president of the congress, and Mr. J. A. Mendes, secretary.

Dr. Bento Miranda addressed the audience in a very eloquent and scholarly speech, as to the necessity of coöperation towards the maintenance of the wild rubber industry of the Amazons, and the creation of other industries side by side with this which is now almost the only industry prosecuted in the whole region.

Dr. Miranda referred to the time when the East Indian government proposed a legislative measure for the purpose of sending a competent expert to Brazil to bring back the products of the *Hevea* tree. Brazilian statesmen then gave their attention to matters of detail rather than to the palpable necessities of the situation. This is, however, no time for recrimination. After dealing with the historical and philosophical aspects of the question, Dr. Miranda in his concluding words referred to the proposal of combining the existing regional banking concerns into a large credit establishment for handling rubber. This establishment would have a laboratory in New York, as well as one at Pará and one at Hamburg, for the comparative study of all qualities of rubber, as well as for the carrying out of a propaganda among the large factories of North America and Central Europe. Contracts would be made on the basis of the different types at prices fixed each season in harmony with the state of the market.

His Excellency the Governor then spoke and informed his

cocoanut products, tobacco and other native products. This exhibition having been formally declared open, the meeting dispersed and the public was allowed free admittance to the pavilion.

His Excellency the Governor once more appeared at the sec-



FRONT VIEW OF THE PEDRO DE TOLEDO PAVILION IN WHICH THE EXPOSITION WAS HELD.



STEAMER WHICH CONVEYED MEMBERS OF CONGRESS TO MOJU

audience of the numerous practical methods he had been adopting of investigating the possibilities of extensive fruit cultivation and of taking other steps of equal importance to the future welfare of the State.

The assembly then proceeded to the Pedro de Toledo Pavilion, where there was a fairly large exhibit of crude rubber, cocoa,

and session of the Congress, in deference to Mr. J. Simao da Costa, who had promised beforehand to address the audience.

Mr. da Costa spoke for an hour and succeeded in riveting the attention of his audience by the interesting way in which he laid out the lines and indicated the avenues open to the people of the Amazons, making it clear that it was "up to them" to follow these lines and win the respect and the admiration of the world, or lag behind in a state of humiliation and failure.

In opening his speech, Mr. da Costa said that he thought James Bryce had been harsh and unjust as to the characteristics of the Brazilian race, but in one respect he was right,—in the matter of agriculture. As regards this valuable industry, Brazilians cannot deny that they have preferred words, words and words, and after-dinner rhetoric, to practical deeds. But there could be no agriculture where there were no agriculturists. The need for agricultural training was immediate and pressing, as modern agriculture and cattle-farming were no longer the avocations of ignorant peasants, but the noble professions of highly trained scientific men. The immense tracts of forest in the

Amazons were useless and an incumbrance, and only served as a hive for the reproduction of nomadic tribes, until the valuable trees were utilized and the useless ones displaced by trees of recognized economic value.

It was therefore necessary that we should imitate the United States of America and create as great a number of agricultural training institutions as our means could afford.

Another thing which also militated against the development of agriculture was the defective fiscal system prevailing in the country, where protection was carried to an absurd degree. But still worse than this were the official trammels with which our customs administration was burdened.

Capital was also a powerful factor in the future development of agriculture and other industries, and it behooved Brazilians of every social sphere to take to heart the necessity and obligation on their part to respect and defend all such as may bring

especially, as Brazil grew the best bananas, oranges and pine-apples in the world, and could develop a trade of many millions sterling in a short period, if it would only adopt such measures as will attract capital and labor to carry out this desideratum.

Brazil had only to set its public administration on a sensible economical and commercial basis, and with all its immense territorial wealth and hidden treasures it would soon become one of the leading nations of the world.

A prolonged cheer covered the last words of the speaker, and the business of the Congress proceeded.

During the Congress the following events took place: A visit was paid to the Museu Goeldi, where experiments in the coagulation of rubber latex on a revolving drum, after the method evolved by Wickham, were being carried on, and were highly appreciated by all present. Mr. J. A. Mendes was the promoter of these experiments and deserves praise for trying to better



ADDRESS BY HIS EXCELLENCY DR. PNEAS MARTINS ON "HEVEA" PLANTATIONS

capital into the country as jealously, as courteously and as gallantly as they would act toward a guest in their own homes. It is impossible to find a more hospitable nation on earth, and one where hospitality is more naturally and heartily dispensed. A people who possessed this inborn virtue should have no difficulty in making respect for the law and for foreign capital and capitalists a matter of national pride.

Mr. da Costa then went on to say that the lack of communications between the north and the south of Brazil, and the higher industrial development of the south in comparison with the north were such that it was impossible to pursue the same protective fiscal policy all over the country without inflicting serious injury on the northern interests and attempts at agricultural and industrial development. He thought that a system could be devised to bring about the needed relief to the north without violating the constitution.

The rest of Mr. da Costa's speech teemed with practical demonstrations of the immense economic value of fruit culture

the appearance of the wild rubber product now exported from the Amazons. The experiment, however, proved that the unfortunate *seringueiro* is not relieved of the annoyance caused by smoke, and unless he is extremely cautious, he is liable to obtain entrefine rubber. But the process is good and it is an open secret that the attempts which have been made during the last three years to perfect this system of coagulation have not been fruitless.

An elaborate feast accompanied the planting of several rubber trees in honor of all the national authorities, and a visit was paid to the Dafundo Rubber plantation in the neighborhood of the city of Pará.

The delegates also paid a visit to the agricultural colony of Sao Joa do Prata, under the direction of monks who had been instructing the wild Indians and educating their children. Another visit was paid to the Eremita rubber plantation and rice factory, a well equipped establishment of great prospective value. Later a visit was paid to the Experimental Station of the State

of Pará, and Dr. J. Ferreira Teixeira delivered a lecture on the economic value of machinery and modern implements in the exploitation of the agricultural industry. Still later all went to the plantation of the Mojú Rubber Plantations and Improve-



EXHIBIT OF J. MARQUES

ments Co., Limited. This visit was quite a revelation to most of the Congressmen, who could hardly believe that so vast an area could be cut down and actually planted in such an incredibly short time. Some of the *Hevea Brasiliensis* and cocoa trees which have been very carefully planted and cared for must sooner or later prove a very remunerative investment.

The lands seem to yield rice in such abundance that all the optimistic expectations of the management have been greatly exceeded, and their chief problem now is—how to prepare such a quantity for the market.

The lands still suffer from the unsightliness of the burnt stumps of forest trees, but in time these will be removed and this plantation will be a model of activity, and, let us hope, a highly paying investment. This lack of aesthetic appearances



ANOTHER VIEW OF EXHIBIT OF J. MARQUES

seems to have offended the eye of the super-British Mr. Akers on his visit here, for he seems to have looked at the stumps "from the top of his high boots" and never stooped to see the beautiful trees now flourishing many feet high above the ground.

If appearances are worth anything, the trees seen at this plantation were the best that the Congressmen were shown in their several trips.

In closing the Congress, His Excellency the Governor and Lady Enéas Martins held a reception at their private residential palace in honor of the Congressmen, and on the day following, Dr. Ferreira Teixeira delivered a very scholarly address, which was enthusiastically cheered, and His Excellency the Governor, in an eloquent appeal to the members of the Congress to continue to work for the same ideals which had brought them together, very clearly stated that upon the attitude of the people of the Amazons depended the future of this region.

All showed an inclination to act and to work, and the proof that the Federal Government meant to respond to this attitude lay in the fact that a Parliamentary committee had been appointed to consider whether the laws already passed to assist the rubber industry could be supplemented to advantage.

The meeting then terminated amid mutual congratulations for all that had been accomplished.

Among the interesting excursions which marked the course of the congress, was one to the Lauro Sodré Institute and Experimental School, which was visited by a large number of delegates. The party, after inspecting the school and the ex-



EXHIBIT OF MUNICIPALITY OF IAUUBA

perimental plantation, assembled for a conference, which was addressed by Dr. Ferreira Teixeira and other speakers, who specially treated the application of machinery to agricultural purposes.

MEMORIAL FROM ACRE FEDERAL TERRITORY TO BRAZILIAN GOVERNMENT.

In the memorial recently presented by the four departments of the Acre Federal Territory to the Brazilian government, it is pointed out that the present duty of 20 per cent. (in conjunction with other charges representing 5 per cent.), interferes with the export of Acre rubber. As a proof of this fact, it is shown that the quantity exported from the territory in 1908 equalled 6,052 tons, while the figure had dropped by 1911 to about 4,237 tons. Meanwhile, imports of merchandise had increased by 140 per cent. in value.

On the other hand, in Peru, the export duty was reduced, in the first place to 8 per cent. and subsequently to 6 per cent., the basis of valuation being in each case the Liverpool price. Bolivia made a reduction to 12 per cent. and later to 8 per cent.

The reduction of the Acre duty to 10 per cent or 13 per cent would, it is urged, increase the exports of rubber from that



EXPERIMENT STATION—"HEVEA" AND PINEAPPLE PLANTING



EXPERIMENT STATION—"HEVEA" PLANTING.

quarter. Such an increase would operate in favor of a reduction of import duties, with the result of developing the latter branch of commerce. A further suggestion is made that this rate of 10 per cent. be uniformly adopted as a maximum on rubber exports from Brazil, Peru and Bolivia.

modification should be effected of existing conditions. He urged the development of the national facilities of transport, with a view to the more efficient distribution of the products of the state.

In the motion dealing with the Governor's message, the view



GENERAL VIEW OF EXPERIMENT STATION, STATE OF PARA

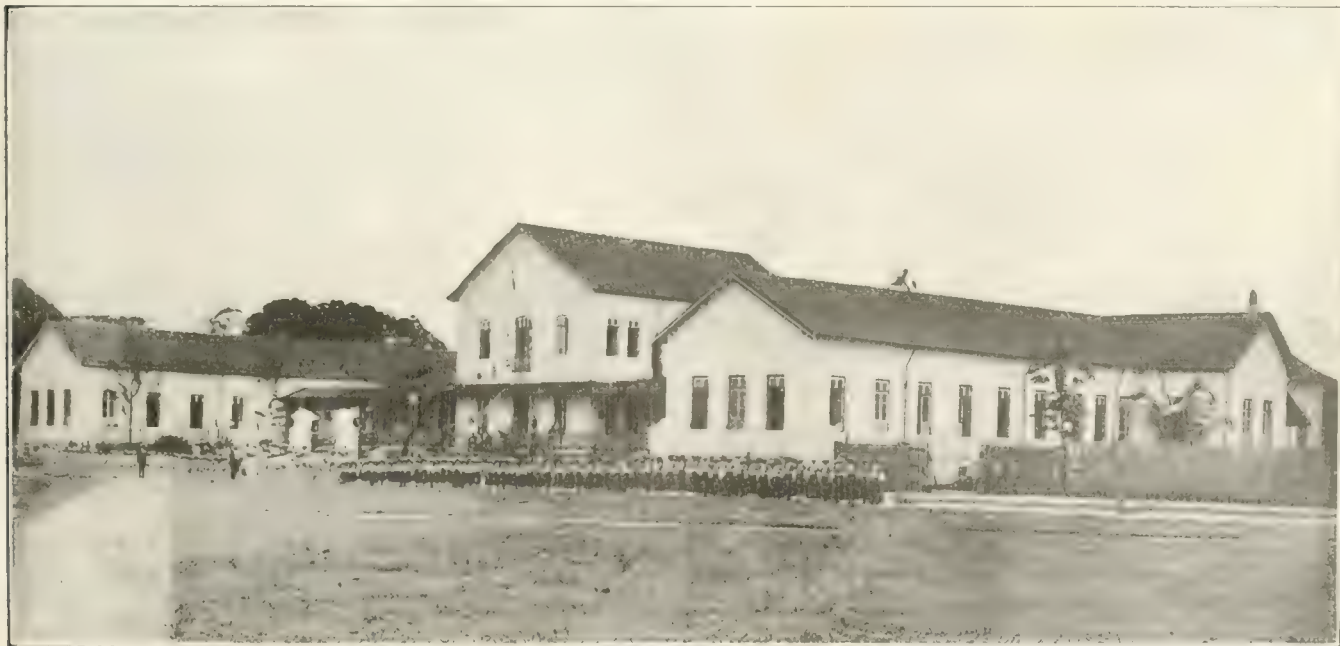
A suggestion is made to limit the application of the reduced import duties to commercial houses with a capital exceeding the equivalent of \$17,000, and to co-operative associations established for this purpose.

Various other points of the proposed reforms are emphasized in later sections of this memorial.

GOVERNOR OF AMAZONAS ON THE RUBBER QUESTION.

At the recent opening of the Amazonas State Legislature, the

was expressed that as Amazonas had for more than half a century supplied the world with rubber, there was cause for disquietude in the present financial and commercial aspects of the situation. The excess of production in the East had not been duplicated in Brazil. Various points merit consideration: the antiquity of the rubber industry, and the superiority of the product, as well as of the smoking and other processes employed. All the correlative factors affecting the cultivation of rubber should be encouraged to bear their respective parts in the contemplated work.



INSTITUTE DO PRATA.

Governor, Dr. Jonathas Pedrosa, urged that under present circumstances it would not do to remain passive, but that a radical

The memorial embodying the above recommendation was signed by more than a dozen members of the Amazonas legislature.

THE GOVERNOR OF PARA COMPLIMENTS DR. HUBER.

Closely upon the Rubber Congress followed the opening of the Pará State Legislature. In his inaugural address, Governor Martins referred to the cordial appreciation by the Congress of the efforts made by the State of Amazonas in behalf of rubber; expressing the unity of idea which allies these states—Pará and Amazonas—for their common welfare. The address included the following reference to Dr. Huber and his work:—

"The 'Museu Goeldi' is one of the State establishments carried on along the lines of its original purpose. In the meanwhile, through the inestimable services rendered by Dr. Huber, the museum has been remodeled in accordance with his ideas. Ground has been secured, contiguous to the museum, suitable for its agricultural work, from which good results are anticipated."

EXPERIMENTS AT MUSEU GOELDI.

In connection with the Pará Congress, an interesting series of experiments was held at the Museu Goeldi (briefly referred to in the foregoing account of the congress), illustrating various systems of rubber extraction, tapping and smoking, as well as

one of a new tapping method of his own invention.

Appreciation was expressed of the system of Senhor Vianna Coutinho, illustrated by him.

Senhor Conrado Bastos presented results of his tapping invention.

A number of the rubber experts attending the Congress availed themselves of this opportunity of witnessing the results obtained by tapping processes new to Brazilian planters.

PERMANENT AMAZONIAN RUBBER COMMISSION.

Among the practical results of the Congress has been the establishment of a permanent sub-commission, which is now studying the following questions submitted to it September 5.

(1) What is the true situation of the national rubber industry, in view of foreign competition? (Referred to Dr. J. Huber, Amando Mendes and Leopoldo Teixeira.)

(2) What is the importance of the industry in the economic life of the country, and what is its proportion as a revenue producer? (Referred to Drs. Barroso Rebello, Francisco Coutinho, Jr., and Pedro Boulhosa.)



GROUP OF ASSISTANTS SMOKING LATEX AT MUSEU GOELDI, PARA.

other points relating to the rubber industry. Among those present were Governor Martins and his wife, as well as the Governor's aide, Captain Pedro Nelasco.

These experiments included tests of smoking latex with *urukuri*, according to the system of José Amando Mendes, the quantity of latex used representing about ten quarts.

Dr. Jacques Huber, director of the establishment, then conducted trials of tapping, upon trees on the spot, more than 15 years old; not according to the Brazilian method, but by that used in the East. Two instruments were employed for the respective processes, regarding which Dr. Huber gave detailed explanations to the visitors, concluding his demonstrations with

(3) Does the plan of Economic Rubber Defense, decreed January 5, 1912, correspond with the necessities of the situation? (Referred to Dr. Ferreira Teixeira, Dr. Bento Miranda and Antonino de Sousa Castro.)

(4) Are the measures put in execution by the government in consequence of this decree producing satisfactory results? (Referred to Dr. Barroso Rebello, Amando Mendes, Pedro Boulhosa, Adolphe Goncalves and Francisco Coutinho, Jr. The replies were to be presented within thirty days.)

(5) Should the commission find that these measures are not the most efficacious for attaining the end in view, it should suggest others of a more effective character to safeguard the in-

terests of the country. (Referred to Drs. Barroso Rebello, Amando Mendes, Pedro Boulhosa, Adolphe Goncalves and Francisco Coutinho, Jr. The replies were to be presented within thirty days.)

BRAZILIAN LOANS.

The American Consul General at Rio de Janeiro, in his report, published in part by the Bureau of Foreign and Domestic Commerce on September 24, states that two emergency loans, both for £2,000,000 (\$9,733,000) have just been negotiated in Europe, one by the Federal Government of Brazil to pay for material and supplies contracted during the year, and the other by the Sao Paulo government to assist the planters in that state to move the coffee crop; and that both of these financial measures, it is believed, will also afford relief to merchants in Rio de Janeiro and Sao Paulo, whose business recently has been paralyzed, owing to the scarcity of money in Brazil and the difficulty of securing advances from the banks at reasonable prices.

DR. PINTO'S LABORATORY IN PARA.

According to the Official Bulletin of Brazil, the Minister of Agriculture of the republic has entered into a contract with Senhor Carlos de Cerqueira Pinto, inventor of a special process for the preparation of india rubber without smoking and for the conservation of the latex of seringa, according to which the Senhor is to construct a laboratory at Pará, within a period of twelve months, for the preparation of the ingredients of his process, called "liquid seringa," "lactina" and "cauchina." This laboratory is under obligation to provide sufficient ingredients for the manufacture of 1,000 tons of india rubber as a minimum. These ingredients will be the property of the manufacturer, but he cannot export them without the consent of the Federal government or sell them in Brazil at a higher price than 200 reis (11.1 cents) for a quantity sufficient for the manufacture of 1 kilogram (2.2 lbs.) of india rubber. During the first three years of his contract, Senhor de Pinto will furnish gratuitously to the Minister of Agriculture, a sufficient quantity of his ingredients for the manufacture of 10,000 kilograms (22,046 lbs.) of rubber per annum. In remuneration for his services Senhor de Pinto will receive various sums, amounting to a total of 1,200 contos (\$385,200) plus 100 reis (5.6 cents) per kilogram of rubber produced without smoking, by means of his ingredients, up to a maximum of 1,300 contos (say \$417,300). He will also receive the benefit of all exemptions from taxation permitted by the law.

In twenty years Senhor de Pinto's laboratory, with all its belongings, machines, accessories, fittings, etc., will revert to the Federal government.

REORGANIZATION OF MESSRS. R. O. AHLERS & CO., PARA. AND MESSRS. AHLERS & CO., MANAOS.

The partnership under which the business of the two above houses has been conducted has recently been dissolved and new firms have been established, in both of which Mr. Rudolph Otto Ahlers and Mr. Arthur Friedrich Seligmann are interested, with the co-operation in Manáos of Messrs. George Deffner and Paul Fehre. The titles of the separate firms are: Seligmann & Co., Pará, and G. Deffner & Co., Manáos.

FOREIGN TRADE OPPORTUNITIES.

A late September report of Consul General Julius G. Lay, stationed at Rio de Janeiro, contains the information that a contract has been made by the Brazilian Government and the Sociedade Anonyma Martinelle for the establishment of a rubber refinery at Manaos, Brazil, and that American building materials, such as cement, iron and steel structural material, roofing, lumber, builders' hardware, etc., could be sold to this contractor. Offers to supply material, prices, etc., will be forwarded by this consulate general to the Sociedade Anonyma Martinelle.

ANNUAL REPORT OF THE INTERCONTINENTAL RUBBER CO.

THE annual report of the Intercontinental Rubber Co. was issued on October 6 by Secretary Walter Dutton from the company's office in Jersey City. The report includes a balance sheet and a statement of profits (as shown below) for the year ending July 31, 1913, and contains the following interesting paragraph: "The conditions in Mexico during the past year have been particularly trying. Interruptions to traffic, field and factory operations have been more frequent and more serious than in previous years. Since June 26 our Torreon factory has been entirely closed, and since 1st of June it has been impossible to communicate with Torreon, except at rare intervals, when messengers were dispatched on horseback to some other city."

The items of invested securities shown on the balance sheet represent bonds and short-time notes purchased in the market and taken at present market quotations. Regular dividends on the preferred stock have been paid during the year.

BALANCE SHEET—JULY 31, 1913.

ASSETS.

Investments in Stock of Merged and Subsidiary Companies:

By cash	\$2,115,321.59	
By stock issues	28,198,575.30	\$30,313,896.89

Patents (exclusive of subsidiary companies)..... 15,141.77

Treasury stock (fractional shares resulting from retirement of preferred stock)..... 2,500.00

Accounts and notes receivable, etc.:

Advances to subsidiary companies	\$677,434.85	
Sundry accounts	23,659.22	701,094.07

Investment securities (market value) 1,415,093.75

Cash 1,301,136.88

\$33,748,863.36

LIABILITIES.

Capital stock:

Common	\$29,031,000.00	
Preferred	1,250,000.00	\$30,281,000.00

Accounts payable, taxes accrued, etc.:

Due subsidiary companies	\$138,233.54	
Sundry accounts	1,716.13	139,949.67

Reserve accounts 1,130,103.58

Surplus (as below) 2,197,810.11

\$33,748,863.36

SURPLUS ACCOUNT.

Surplus, August 1, 1912 \$2,110,940.12

Gross profit on operations..... \$199,322.09

Net income from securities, interest, etc. (after adjustment of investment securities to current market value) 61,002.05

\$260,324.14

Less—Administration and general expenses	54,954.15	205,369.99
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\$2,316,310.11

Charges against surplus:

Reserve against investments in and loans to subsidiary companies..	\$31,000.00	
Dividends paid on preferred stock	87,500.00	118,500.00

Surplus, July 31, 1913..... \$2,197,810.11

Effects of Overloading Solid Rubber Tires.

In our last issue we presented some figures which proved conclusively the wisdom and economy of adequate tire equipment. Since publishing that article, The B. F. Goodrich Co. has supplied us with further information regarding the detrimental effects of overloading and overspeeding solid rubber tires, and we present herewith extracts from a paper prepared by Mr. S. V. Norton, of the Goodrich Truck Tire Department, for the benefit of our readers who are interested in this important subject.

TIRE manufacturers, after years of observation and experiment, have adopted a schedule of carrying capacities, which, with but slight variations, is now considered standard. It seems hardly necessary to repeat the figures at this time for they are given in every tire manufacturer's catalog. However, the factor of safety in the schedule is nil. So many other factors enter into the matter, such as excessive strains due to bumps, depressions in the roadway, negotiating grades, overspeeding, and the severe use of brakes, that no provision has been made for overload.

Just what is meant by the overloading of rubber tires? In the process of manufacture crude gum is mixed with pigments and the whole mass is kneaded together until the compound becomes homogeneous. After various intermediate steps, the rubber is placed in a mold and vulcanized. During vulcanization the tire assumes a more or less permanent form, to which it will normally return if it is not stretched or compressed beyond certain definite limits. If the stretching or compression exceeds these limits, however, the strain will invariably cause a rupture or disintegration of the rubber.

To illustrate: Take a strong, properly vulcanized rubber band. Stretch it moderately, release it, and it will return to its normal shape. The process may be repeated indefinitely, depending upon the quality of the rubber, and the band will resume its shape. But stretch it beyond its limit of elongation and what happens? The rubber breaks and cannot be restored to its previous condition. The damage has been done and the rupture is permanent. Similarly, a piece of rubber properly vulcanized may be compressed within certain limits, released, and it will resume its normal shape. The compression may be repeated an indefinite number of times, depending upon the quality of the compound. So long as its limit of compression has not been reached, the rubber will continue to spring back into shape and nothing but abrasion or some other physical or chemical action will destroy its elasticity. Compress it beyond its limit of cohesion, however, or in other words, beyond its power of resistance, and the rubber breaks down or ruptures just as inevitably as in the case of stretching beyond its limit of elongation. The rupture is absolute and permanent. No method yet devised will restore to the unit its former elastic qualities.

There are three kinds of overloading: The first is due to undersized original tire equipment. The competition in business makes it necessary to economize wherever possible in the equipment of trucks. Manufacturers build the best machines that money and skill can devise, and offer them for sale fully guaranteed—except for tires. They usually equip them with the smallest tires that will come within the tire maker's schedule of carrying capacities. Then, if for any of the reasons mentioned later, the tires fail to deliver the service expected, the responsibility is at once automatically shifted to the tire manufacturers' shoulders, and they are expected to live up to their reputations for liberally "taking care" of their product. Suppose the sales agents order just the chassis and then have special bodies built—bodies too heavy in themselves, or so large as to permit the carrying of loads far in excess of those the tires are able to sustain without breaking down. What happens? The customers

soon have trouble with their tires, and they complain that the cost of maintenance is more than they had been led to believe.

The second kind of overloading is due to mis-proportioned equipment. Sometimes we find that trucks whose tire equipment, regarded as a whole, is ample for the service required, will be lacking in carrying capacity at one end, while at the other end there may be an excess capacity over the actual demands. I have in mind a case in which we were called upon to make an adjustment. The proportion of weight carried by each axle showed that the front tires were considerably overloaded while those on the rear had an excess capacity of nearly a ton. The owner of the truck protested his innocence, saying that he had never been told he was misusing his tires. The difficulty once explained, however, and the proper-sized front tires applied, there was no further trouble.

The third kind of overloading, which is at once the most prevalent, the most illusive, and the hardest to cope with, is due to the improper loading of the commodity upon the truck. Some times this may be the result of faulty distribution of the load over the front and rear axles, which may cause the failure of the tires wholly without the knowledge of the owner.

By far the most difficult phase for the tire maker to overcome is the deliberate placing on the truck as a whole of too heavy loads for the tires to carry. In many cases, regardless of the original training and explanations given to a driver, there is always the temptation to fill the truck to the limit of its physical capacity to move the goods. The merchandise must be moved, and "a load is a load," whether it exceeds the carrying capacity of the tires or not. Unless the tire equipment has an ample margin of safety, this attitude results in poor economy.

The drawing of trailers, while more common abroad than in the United States, is another means of improperly loading tires. No doubt this is an economical means of hauling, but trucks so engaged are placing a greater strain upon their tires, and they should be at least the next size larger than those which would safely carry the truck without a trailer.

Turning now to the effects of overspeeding on solid tires, three things should be considered: They seem so axiomatic that they need only to be mentioned briefly. First, it generates excessive heat in the tires, which tends to shorten the life of the rubber. Even tho not overloaded, they may be driven so fast that they are "burnt up," as it were, in a very short time. Second, it accentuates shocks and jars due to unevenness in the roadway. The stresses thus set up are really the equivalent of sudden overloads, and they tend just as effectively to cause the premature failure of the tires as tho they were loaded beyond their capacity. Third, overspeeding induces the severe use of brakes, especially in thoroughfares in which there is much traffic. This in turn is apt to cause unnecessary friction with the road surface which, of course, wears out the tires promptly.

Of imports amounting to \$68,126,292 from London to the United States for the first half of 1913, crude rubber represented a value of \$14,481,358.

Rubber in the New Tariff.

SINCE the introduction of the new tariff measure, the portions affecting rubber have been subjected to only slight modifications, its original provisions having been in general adopted in the final passage of the bill on October 3. Hence the remarks on the subject of THE INDIA RUBBER WORLD in the issue of May 1, page 403, are still to a large extent applicable, while the revised details of the rates in another column bring the information up to date.

That much preliminary work had been done in committee is evident from the fact that two important points affecting crude and waste rubber were provided for by the new measure in accordance with the desires of the rubber trade.

CRUDE RUBBER AND GUTTA PERCHA

The attempts which had recently been made in France—without success—to impose a duty on crude rubber tended to support the arguments of American manufacturers on the subject. One of the most effective weapons in this struggle was the brief of the Rubber Club of America, submitted on March 29, 1912, to the Committee of Ways and Means, which was supported by telegrams from various important rubber manufacturers. Opposition to the suggested duty on rubber was still actively carried on, with the result that the bill as presented to the House on April 8, 1913, retained crude rubber and gutta percha in the free list.

SCRAP RUBBER.

In accordance with the representations of the waste trade, the new measure omitted the clause which restricted the free entry of scrap to such as had been worn out by use.

MATERIALS FOR RUBBER MANUFACTURE.

With the desire to let rubber manufacturers share in the general reduction of duties on materials, the rates on many important articles had been reduced in committee. A further cut was in various cases made during the discussion of the bill, which, in its final shape, displays marked reductions in various leading lines, as compared with the Payne tariff; all of which are shown in detail by the annexed table. Prominent among these changes is the transfer to the free list of sulphuric acid and flowers of sulphur, which have hitherto paid duties equal to 8.63 per cent., and 13.73 per cent. Of course, the exact benefit which American makers will derive from these reduced duties depends upon the extent to which they are reflected in the quotations of chemical manufacturers and dealers.

COTTON FABRICS.

Textile goods constitute such an important part of the purchases of rubber manufacturers, that the sweeping reductions in this schedule require careful study as to their special application to individual requirements. The item of most interest to manufacturers will doubtless be paragraph 262, by which tire fabrics are cut from 45 per cent. to 25 per cent., while cotton fabrics not otherwise specified are reduced by paragraph 266 to 30 per cent. Here the special needs of individual makers will in each case govern the amount of benefit they will derive from tariff changes in such cotton articles as are employed in the further manufacture of their goods.

Those manufacturers who contemplate weaving their own tire fabrics will be interested in paragraph 250, dealing with cotton yarns in various counts.

Belting of cotton and rubber is reduced by paragraph 262 from

30 per cent. to 15 per cent., while waterproof cotton cloth containing rubber now pays, under paragraph 254, 25 per cent. instead of the compound duty equaling about 50 per cent.

CABLES.

By paragraph 114, telegraph, telephone and other wire composed of metal and rubber, is subjected to 15 per cent., while the compound duty hitherto levied has equalled 52 per cent.

ASBESTOS.

Crude asbestos remains upon the free list. Efforts were made during the hearings before the committee to obtain a uniform rate of 40 per cent. on asbestos yarns and woven cloths. The principle of a uniform rate has been conceded, but only to the extent of 20 per cent. instead of 40 per cent., as previously. Manufactures of asbestos not specially provided for pay 10 per cent. instead of 25 per cent., as hitherto.

AUTOMOBILE TIRES AND BICYCLE TIRES.

These being specially excepted from the higher duty on parts of automobiles, would apparently fall into the "basket" clause of unspecified rubber goods at 10 per cent.

RUBBER MANUFACTURES.

The satisfaction experienced by rubber manufacturers at the lower rates on materials, diminishing cost of production, has been qualified by the sweeping reduction made in the duties on rubber goods, which now stand (instead of 35 per cent. and 40 per cent.) at 15 per cent. for druggists' sundries, 25 per cent. for hard rubber goods, and 10 per cent. for articles not otherwise specified. To what extent this reduction will be offset by lower costs resulting from the operation of the tariff on materials, can only be determined by the maker's calculations in each particular instance. Economy in cost of production must now, more than ever, be the watchword of the rubber manufacturer.

In view of the reduction in duties of rubber manufactures having only been made public on the introduction of the bill, these provisions have not had the opportunity of being subjected to the same amount of detailed criticism as other portions of the measure. Still the new tariff is in operation and the actual results of its working have yet to be experienced.

TARIFF TROUBLES

Where there is a "basket" clause, into which unspecified articles automatically fall, watchfulness is required on the part of manufacturers to see that any competing goods pay duty under proper classifications at the normal tariff rates. This involves of course a good deal of detail, but such work would be repaid by the fair adjustment of tariff rates. The application of a new tariff always causes at first a little confusion until its provisions are in working order and the right classifications established. For some time to come the decisions of the inevitable disputes between importers and the government officials will form a series of precedents, of value in future cases. When the present German tariff was inaugurated, a supplementary hand book giving the different classifications was issued for the guidance alike of government officials and importers. Such a compendium will doubtless in time be issued here, as the provisions of the tariff in many cases require interpretation, and the gradual experience to be gathered by those interested in the operation of the tariff will prove a valuable guide in cases of difference of opinion as to the classification of imported products entering into competition with those of American manufacturers.

SUMMARY OF RUBBER TARIFF CHANGES.

Free list—	1909		1913			1909		1913	
	Payne Tariff Paragraph	Duty	Underwood Tariff Paragraph	Duty		Payne Tariff Paragraph	Duty	Underwood Tariff Paragraph	Duty
Asbestos	502	free	406	free	Schedule I—Cottons—				
Gutta percha	582	free	502	free					
Crude rubber	591	free	513	free					
Waste rubber	591	free	513	free					
Schedule N—									
Rubber manufactures (not specified)	N. 463	35%	N. 368	10	Waterproof cloth	347	10c. sq. yd & 20%	254	25%
Gutta percha manufactures (not specified) .	N. 464	35%	N. 368	10	Clothing	I. 324	50%	256	30%
Sponges	N. 464	40%	....	..	Tire fabrics	I. 330	45%	262	25%
Druggists' sundries .....	....	35%	N. 368	15%	Belting	I. 330	30%	262	15%
Hard rubber .....	....	35%	N. 369	25%	Cotton cloths, not specified	I. 332	45%	266	30%
Asbestos, woven and yarn	N. 462	40%	N. 367	20%	Bandings, etc.	I. 330	45%	262	25%
Asbestos, woven and yarn	N. 462	25%	N. 367	10%	Schedule J—Manufactures of flax—				
Schedule C—					Bandings .....	....	....	278	30%
Telegraph, Telephone wires, etc.	C. 135	40%	C. 114	15%	Clothing .....	....	....	278	40%
Card clothing, rubber faced	C. 145	55 c. sq. ft.	C. 124	35%	Schedule K—Manufactures of wool—				
Rivets for tires	C. 167	45%	C. 138	20%	Clothing	K. 332	44c. lb. & 60 %	291	35%
Penholders with rubber erasers	C. 187	40%	C. 157	25%	Bandings	K. 383	50c. lb. & 60 %	292	35%
					Schedule L—Manufactures of silk—				
					Bandings	L. 402	60%	316	45%
					Clothing	L. 402	60%	317	50%
					Woven fabrics	L. 403	50%	318	45%
					(Including those with rubber.)				

COMPARATIVE TABLE OF DUTIES UNDER THE PAYNE TARIFF AND THE UNDERWOOD TARIFF ON CHEMICALS USED IN RUBBER MANUFACTURE.

	Payne tariff		Para-graph	Under-wood tariff			Payne tariff		Para-graph	Under-wood tariff	
	Rate	Equal to		Rate	Equal to		Rate	Equal to		Rate	Equal to
Acid—						Oils—					
Carbonic	free	free	387	free	free	Castor	35c.	34.94%	45	15%	15%
Hydrochloric or muriatic	free	free	387	free	free	Cottonseed	free	free	561	free	free
Sulphuric	14c.	8.63%	387	free	free	Linseed	15c.	27.11%	45	10c.	18.08%
Ammonia Carbonate	11c.	27.73%	7	14c.	13.86%	Palm	free	free	561	free	free
Antimony Oxide, salts and	11c. & 15c.	57.38%	144	25%	25%	Rapeseed	10c.	23.06%	45	6c.	13.83%
Asphaltum	50c.	11.76%	76	50c.	11.76%	Paints—					
Carbon	3.00	29.63%	76	\$1	9.88%	Unmanufactured	\$1.50	59.11%	51	15%	15%
Canada	free	free	9	10%	10%	Manufactured	\$5.25	52.11%	51	20%	20%
Storax	free	free	9	10%	10%	Black pigments	25%	25%	53	15%	15%
Tolu	free	free	9	10%	10%	Blues—					
Barytes	free	free	437	free	free	Prussian	8c.	44.23%	52	20%	20%
Carbon	free	free	439	free	free	Ultramarine	3c.	32.22%	52	15%	15%
Chalk—						Oxide of Cobalt	25c.	24.14%	24	10c.	9.93%
Unmanufactured	free	free	446	free	free	Green—Chrome	4 3/4c.	25.98%	54	20%	20%
Ground, bolted, etc.	1c.	39.37%	15	25%	25%	Lead pigment—Litharge	2 1/2c.	53.32%	56	25%	25%
Calcium Chloride	25%	25%	440	free	free	Reds—					
Coal—						Vermilion containing quick-silver, etc.	10c.	17.53%	59	15%	15%
Crude and pitch	free	free	452	free	free	Vermilion without quick-silver etc.	4 3/4c.	29.41%	59	25%	25%
Non-medicinal products etc.	free	free	22	5%	5%	Whites—Whiting and Paris white					
Emery, etc.—						.....	14c.	43.98%	60	1/10c.	17.50%
Ore	free	free	479	free	free	Zinc—					
Grafs	1c.	16.98%	343	1c.	16.98%	Oxide, ground dry .....	....	....	61	10%	10%
Fullers Earth .....	....	....	....	....	....	Oxide, ground in oil, etc. ....	....	....	61	15%	15%
Crude	\$1.50	19.32%	76	75c.	9.66%	Lithopone, etc. ....	....	....	61	15%	15%
Manufactured	\$3.00	32.65%	76	\$1.50	16.32%	Plumbago	free	free	579	free	free
Glycerine .....	....	....	....	....	....	Potash Bichromate	2 1/2c.	45.86%	64	1c.	20%
Crude	1c.	11.99%	35	1c.	11.29%	Stone—					
Refined	3c.	10.63%	35	2c.	7.09%	Pumice, unmanufactured ..	....	....	75	5%	5%
Gums (Cajuput, Kauri, and ..	free	free	500	free	free	Wholly or partly manu-factured .....	....	....	75	1/4c.	....
Damir .....	....	....	....	....	....	Sulphur—Flowers	\$4	13.73%	617	free	free
Lanolin and wool grease .....	....	....	498	free	free	Talcum	35%	35%	69	15%	15%
Magnesia Carbonate	7c.	43.27%	47	5c.	21.63%	Turpentine—Venice	free	free	635	free	free
Mica and manufactures	5c. & 120%	36.31%	77	30%	30%	Wax—Vegetable or mineral.	free	free	641	free	free

THE TARIFF ON RUBBER FOR THE PAST EIGHTY YEARS.

JUST at present the most interesting matter occupying the minds of rubber manufacturers, and dealers also, is the new tariff law and its possible effects. In view of the general interest in this topic it seems quite appropriate to give a brief survey of all the American tariff bills which have referred in any way to rubber.

The first tariff act that mentioned rubber was the act of July 14, 1832. Very naturally, that exempted rubber from duty. As there were practically no rubber manufacturers in the United States at that time there obviously was no particular need for protection. To be sure there were a number of people trying to make articles out of rubber, but they had not succeeded in any commercial sense. But quite a little crude rubber was being imported—largely into the port of Salem—which was being used by experimenters in an attempt to find some method or process by which practical articles could be manufactured out of rubber. The only importations of rubber goods coming into the country at that time consisted of rubber shoes, clumsy and crude in shape, made by the natives along the Amazon. These shoes, notwithstanding their weight and absolute lack of any approach to graceful lines, served to keep the feet dry and had reached quite a sale in New England.

Since 1832 there have been, including the Underwood act, twelve different acts referring to rubber. The last two—the Payne-Aldrich and the Underwood—are mentioned in detail in another article. The other ten acts are briefly outlined below.

THE ACT OF JULY 14, 1832, makes first mention of rubber as a dutiable article by exempting it from duty.

THE ACT OF AUGUST 30, 1842, imposes an ad valorem duty of 30 per cent. on rubber "oil cloth," webbing, shoes, braces or suspenders or other fabrics or manufactured articles composed wholly or in part of rubber.

THE ACT OF JULY 30, 1846, WALKER TARIFF, imposed an ad valorem duty of 30 per cent. on braces, suspenders, webbing or other fabrics composed wholly or in part of rubber not otherwise provided for, and 10 per cent. ad valorem on rubber in bottles, slabs or sheets, unmanufactured.

THE ACT OF AUGUST 5, 1861, MORRILL TARIFF, made the tariff on crude or unmanufactured india-rubber 10 per cent. ad valorem; on rubber boots and shoes, 30 per cent. ad valorem.

THE ACT OF JULY 14, 1862, imposed a 50 per cent. ad valorem duty on manufactures of rubber, or silk and rubber, or rubber, silk and other materials, and 10 per cent. ad valorem on rubber milk.

THE ACT OF JUNE 6, 1872, made a horizontal reduction from existing rates of 10 per cent. on all manufactures of india-rubber and gutta percha.

THE ACT OF MARCH 3, 1883, placed a duty of 25 per cent. ad valorem on rubber boots and shoes; of 30 per cent. ad valorem on fabrics made wholly or in part of rubber, not specially enumerated; on other articles not specially enumerated made wholly of rubber, of 25 per cent., and of 30 per cent. ad valorem on combs of all kinds.

THE ACT OF OCTOBER, 1890, McKINLEY TARIFF, placed raw rubber, rubber milk, old scrap or refuse worn-out rubber, fit only for re-manufacture, on the free list. A duty of 35 per cent. ad valorem was imposed on manufactures of gutta percha, vulcanized or hard rubber, or articles of which they are the chief component; and on manufactures of rubber not specially provided for a duty of 30 per cent. ad valorem was imposed.

THE WILSON TARIFF OF 1894 provides for the free entry of crude rubber, old scrap and waste rubber worn out by use and fit only for re-manufacture; gutta percha and asbestos. It im-

poses a duty of 25 per cent. ad valorem on articles made of India rubber, or of which India rubber is the component of chief value, the same duty being imposed upon manufactures of asbestos. Manufactures of gutta percha and hard rubber carry a duty of 30 per cent. ad valorem.

THE ACT OF JULY 24, 1897—DINGLEY TARIFF, exempted crude rubber, rubber milk and scrap fit only for re-manufacturing, from duty.

Par. 314 of Schedule I, which imposes a duty of 50 per cent. on ready made clothing, provides that any outside garment referred to in the paragraph, having rubber as a component material, shall pay a duty of 50 per cent. ad valorem and 15 cents per pound. Webs and webbing, wholly or in part of silk, into which rubber enters, 50 per cent. ad valorem; manufactures of india-rubber or in which it is the chief component, 30 per cent. ad valorem; suspenders, braces, beltings, bindings, etc., in part of rubber, 45 per cent. ad valorem; manufactures of hard rubber, 35 per cent. ad valorem; manufactures of silk or having silk as component of chief value, containing rubber, not otherwise specified, 60 per cent. ad valorem; gloves excepted.

WORLD'S COMPARATIVE PRODUCTION OF WILD AND PLANTATION RUBBER.

IN dealing with the general statistics of the world's rubber production, there has been some difficulty in the past, arising from the want of a uniform basis for showing the comparative output of wild and plantation rubber during identical periods. This obstacle has been overcome in the statistical returns lately published by the "Superintendencia da Defesa da Borracha," of Rio de Janeiro, the location of the Brazilian Department of Agriculture, which now deals with rubber.

These figures (a summary of which is reproduced below) show that during the first five months of the years 1910 to 1913, wild rubber has practically remained stationary, while plantation rubber represents an increased production during that period of about 11,000 tons or about equal to 26,000 tons a year. According to Brazilian estimates, the world's total rubber output had increased for the first five months, from 26,632 tons in 1910 to 37,458 tons in 1913, the equivalents for twelve months being thus respectively 64,000 and 90,000 tons. This last named annual figure has been more or less the basis of recent English statistical reports.

With the Brazilian figures including actual shipments up to the latter part of May, a standpoint is afforded for the further discussion of the comparative production of wild and plantation rubber.

The details of origin and distribution of the above-named quantities will be dealt with in a future table.

WORLD'S COMPARATIVE PRODUCTION OF WILD AND PLANTATION RUBBER.

ANALYSIS OF BRAZILIAN ESTIMATES FOR FIRST FIVE MONTHS OF YEARS 1910 TO 1913.

	1910. Tons.	1911. Tons.	1912. Tons.	1913. Tons.
World's production of wild rubber for five months	24,159	22,821	23,707	22,928
World's production of plantation rubber for five months	2,473	4,555	8,769	14,530
Grand total for five months	26,632	27,376	32,476	37,458

EQUALLING APPROXIMATELY FOR TWELVE MONTHS.

	1910.		1911.		1912.		1913.	
	Tons.	About Per Cent.	Tons.	About Per Cent.	Tons.	About Per Cent.	Tons.	About Per Cent.
Wild	58,000	90	54,000	84	55,000	71	54,000	60
Plantation	6,000	10	11,000	16	23,000	29	36,000	40
Estimate 12 months	64,000	100	65,000	100	78,000	100	90,000	100

Singapore the World's Future Rubber Market.

By Our Special Correspondent.

OF Malayan rubber there will be produced this year some 38,000 tons—32,000 tons from the Peninsula, and 6,000 tons from the rest. Next year, 1914, the Malayan yield may be safely put at 55,000 tons (Ceylon at 18,000); for 1915, 75,000 tons, rising to 140,000 tons by 1917 or so. This means that from 1914 onwards Singapore will dispose of more than half of the world's supply of rubber. The controlling market for plantation rubber will therefore be Singapore, not London.

I have recently gone into the comparative statistics of shipments and markets, and I find that America can now buy rubber much more cheaply in Singapore than in London and ship direct. Assuming the London price for good average smoked sheet to be, say, 2s. 4d. per lb. the costs of buying it in London are roughly as follows, taking 100,000 lbs. as a basis:

	£	s.	d.	Equivalent in American Money.
1. Handling, delivery on board, wharfage and harbor dues, etc., and sundry expenses, about 1s. 3d. per case, 700 cases	43	15	0	\$212.63
2. Insurance on 100,000 lbs. @ 2s. 4d. = £11,666 13s. 4d. @ $\frac{1}{8}$ per cent.	14	12	0	70.96
3. Interest on £11,680 @ 4 per cent. for 30 days	38	18	0	189.06
4. Freight on 70 tons cube @, say, 10s. per ton	35	0	0	170.10
5. Loss in weight, say, $\frac{1}{2}$ per cent.	58	7	0	283.58
6. Commission @ $\frac{1}{2}$ per cent.	58	7	0	283.58

Estimated total of costs, C. I. F. New York. £248 19 0 \$1,209.92

This is equal to .6d. per lb. This is only a rough estimate, but the costs will certainly be $\frac{1}{2}$ d. per lb. at present prices.

The costs of purchase in the open market in Singapore and shipping direct to New York of the same rubber with the London quotation at 2s. 4d. are approximately as follows, taking, say, 1,000 piculs (local unit)—133,333 lbs.—and calculating in Straits dollars (2s. 4d.) the exchange being taken at 2s. 4½d., the purchase price is assumed at \$122 per picul, which = 91.5 cents (Straits currency) or 2s. 2½d. per pound. (The factor for converting \$1 per picul into pence per lb., exchange @ 2s. 4½d., is .2137.)

1,000 piculs @ \$122 = \$122,000—the purchase price.

	Straits Currency.
1. Handling, sorting, repacking, new cases, etc. and delivery on board @ 1½ cents per lb.	\$2,000.00
2. Interest @ 6 per cent., for 90 days.	1,875.00
3. Insurance @ $\frac{3}{8}$ per cent. on \$126,000.	472.50
4. Freight @ 70s. (\$30) per ton cube of 50 feet, 133,333 lbs. will require about 900 cases = 90 tons	2,700.00
5. Loss in weight, say, 1 per cent. allowed.	1,220.00
6. Commission @ $\frac{1}{2}$ per cent.	610.00

Estimated total of costs, C. I. F. New York. \$8,877.50

This equals 6.65 cents per lb. (\$8,877.50 = £1,054 7s.) or, roughly, 1.9d. per lb. The landing charges in New York are, of course, not included in either account.

The difference is at least 1.3d., and may be taken at, roughly, 1½d. per lb. between purchase in London and purchase in Singapore. This means that rubber purchased here at 2d. per lb. under the London market can be landed in New York at the same price that it costs to purchase this rubber in London, thus saving all the freight, shipping costs and commission, etc., on rubber bought in London.

This means 2 per cent. on the outlay saved. We, in Singapore, would benefit largely by this also as at present we are not getting more than 2s. per lb. as parity with London at 2s. 4d. owing to the absurd extra charges amounting to about 5 per cent. which are now foisted on us at the London end for absolutely no services rendered. This you have to pay for when you buy in London.

Singapore would be very glad to establish a direct connection with American consumers on a large scale, on a basis of delivery in New York at the London quotation. There are many advantages in this. The consumers would get the rubber direct from the estates without any of the hopeless mixing of breeds that takes place in London. There are fully 1,000 tons of rubber now sold locally per month, mostly speculative purchases for resale. Three hundred to 500 tons per week could be had quite easily in a very short time. Standard samples would have to be kept and any quantity of any sample could be purchased direct in bulk.

Most estates would prefer to sell here now if there was an assured free market, and we are now organizing a Malaya Rubber Growers' Association here in order to accomplish this. They would thus get their money at once instead of having to wait two months for it, which is a big consideration for most properties now, with the fall in the price of rubber. The only estates which will continue to sell to London are those which are under agreement with London agents to sell through them for a term of years. This will not affect one-quarter of the planted area, tho, and shareholders are beginning to kick at losing 5 per cent. of their revenue for nothing. American consumers would thus find a great advantage in dealing here direct, especially on a cash basis.

All the rubber purchased in London for America is mixed up, and one lot may consist of breaks from Ceylon, Straits, Borneo, and Sumatra, etc., all different climates; and the rubber, altho exact in appearance, will give quite different reactions. By purchase here the consumer would know even the estate every parcel came from. As I have read THE INDIA RUBBER WORLD for some nine years I know a little about the manufacturers' end of the question in America.

Germany and France are also aiming at direct purchase here in bulk instead of purchase in London.

The rubber which is at this moment being sold in Singapore is the poorer quality only, as owing to our present subordination to the London market it actually pays to ship the best rubber there still, owing to lack of local buying orders. This would disappear in a week if only estates could be assured of genuine sale to consumers here. In fact if large and regular buying orders were to be sent direct, on agreed standardized samples, further considerable savings could be made in handling, etc.

Judging from many conversations which I have had with Americans out here, I gather that knowledge of the details of the Mid-East planting industry is fairly vague and I believe that they should be at once informed in view of the fact that in the future your manufacturers will be drawing the bulk of their supplies from us.



A BUSY SQUARE IN SINGAPORE.

THE DEPARTMENT OF AGRICULTURE INSTALLS AN EXPERIMENTAL PLANT.

The director of the Department of Agriculture for the Federated Malay States, Mr. L. Lewton-Brain, has induced the Government to order a complete experimental rubber vulcanizing plant, which is to be erected near the offices of the department in Kuala Lumpur, and which will be under the direct supervision of Mr. B. J. Eaton, chief agricultural chemist.

The entire plant is housed in a special and most suitable building, constructed of brick, with roof of French tiles. It consists of one room 30 feet x 30 feet in which the vulcanizing machinery will be installed, together with an adjoining room, 30 feet x 15 feet, in which the testing apparatus will be placed. A veranda, measuring 30 feet x 12 feet with expanded metal sides, which runs along one side of the building, will contain a vertical steam boiler with steam pump, injector, horizontal steam engine, donkey pump for boiler feed purposes, etc.

The installation of rubber machinery now includes one washer with duplicate rolls 9 inches x 4½ inches, one pair of which are made from a special mixture of metal to prevent rust. This machine is provided with covered worm and worm wheel adjustment, and with cast aluminum tray for receiving the washed rubber. It is also fitted with cold water and steam connections, so that hot or cold water can be used in washing, the water passing through a specially designed aluminum water spray.

The mixer has chilled rolls 9 inches x 4½ inches and is provided with cold water and steam arrangements, so that it can be worked hot or cold.

The calender is a three-roll machine with iron rolls 9 inches x 4½ inches and arranged for steam heating and water cooling. The calender is practically a universal one, i. e., all three rolls can be run at even speed, or any two can be run at even speed while the third runs at friction.

Included in the installation is a screw vulcanizing press with three steam-heated platens, and a jacketed heater for either wet or dry steam. There is also an autoclave press or combined hydraulic press and vulcanizer, operated by means of a hand hydraulic pump.

Since vacuum drying is used by some planters and manufacturers and not by others, on account of the difference of opinion as to the effect of this drying system on the rubber, it was thought advisable to install a small vacuum drying plant, this being complete with vacuum chamber provided with steam-heated platens, condenser, receiver, and vacuum pump driven by

means of belt. In connection with the vacuum dryer is provided a "Dacostidge" patent combined smoking and vacuum drying arrangement, as well as a Da Costa coagulator.

Independent of the vacuum drying system there is provided a hot air drying arrangement, the heat being produced by means of steam pipes. These pipes are laid in a convenient position so that the heat passes through the rubber, and the moist air is drawn off from suitable ducts through an exhaust fan driven by belt through counter-shaft from the steam engine. In conjunction with the drying chamber is a smoking arrangement whereby smoke may be injected, if desired, at the bottom of the chamber and drawn through the rubber.

The most up-to-date testing instruments will be used for ascertaining the physical qualities of the vulcanized rubber. These will include the well-known Schopper machine fitted with hysteresis apparatus and driven by water pressure, a Schwartz machine for hysteresis and permanent-set tests, abrasion machines for testing

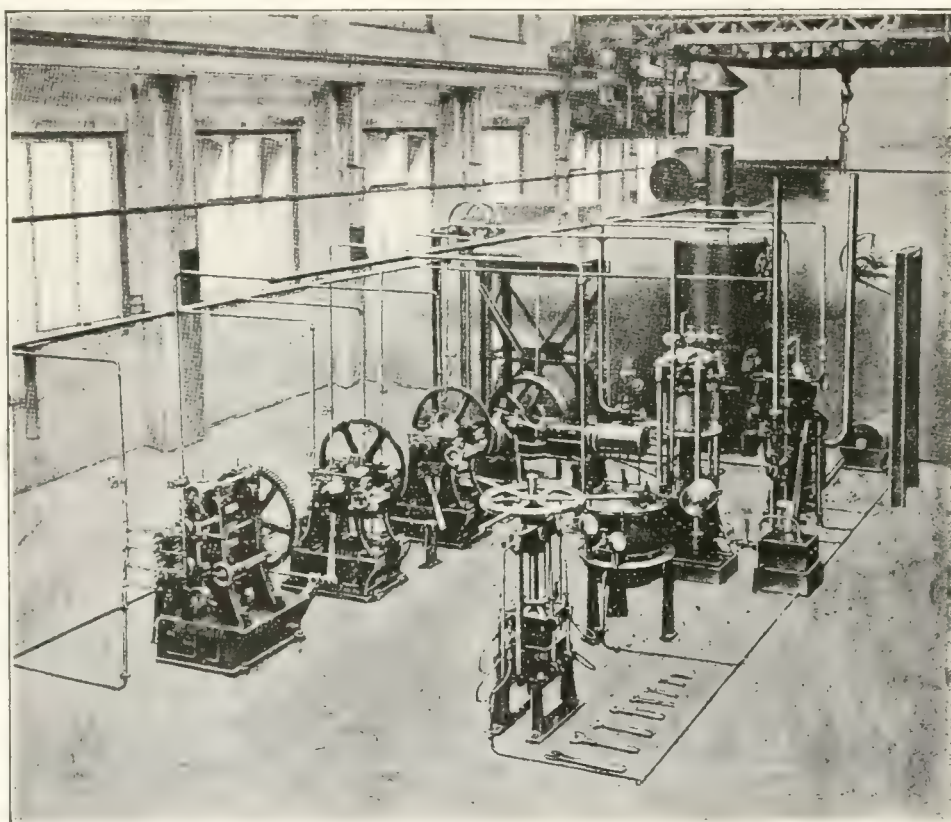
discs, rings and balls of vulcanized rubber, a machine designed by Professor Martens of the Royal Prussian Testing Station for alternately stretching and releasing test rings, a Breuil elastodurameter, viscosity apparatus and a motor-driven centrifugal machine for analytical purposes, etc., etc.

The department has already a rubber factory of its own, which includes two washing machines, consisting of one washer with even speed rollers for preparing sheet and one machine with diamond-cut rollers unevenly geared for the

manufacture of crepe. In these machines, the rubber obtained from trees on about 150 acres of the Experimental Plantation attached to the department is treated. A special drying room with steam pipes for heating, and provided with an exhaust fan also adjoins the factory, steam being generated in a small vertical boiler outside the building. A small smoke house is also used for preparing smoked sheet.

The department is also fortunate in having two other estates in bearing, with factories, etc., in course of erection, where experiments can be carried on under supervision. Various novel designs and labor saving devices have been embodied in the construction of coagulating, drying and smoke rooms in connection with the factories on these departmental estates.

In addition, the department is able to co-operate with the majority of the estates in the country, and rubber samples prepared by planters will be examined as desired and reported upon, recommendations being made when necessary on the results obtained. The work which can be carried out with this plant



EXPERIMENTAL RUBBER VULCANIZING INSTALLATION.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Working in a Rubber Factory.

By Lucy Case Gowin.

[The writer of this article is the wife of the Professor of Sociology in Wesleyan University. She entered a rubber footwear factory and learned to make rubber shoes for the purpose of studying the conditions under which girls work in these factories, with a view to preparing a book on the subject. Her conclusions will be found of interest by all those connected with rubber footwear factory management. Two of the ideas she suggests, viz., that public demonstrations of rubber shoe making be given at fairs and at other suitable places, and that shoe dealers make an occasional window display of rubber in the various stages of its manufacture, from the crude biscuit to the finished shoe, have already been tried, in a limited way, and with excellent results, by several manufacturers.—Editor.]

THE superintendent's face was a study. He knew that I was the wife of a university professor. But he could not see why I wanted to work in his factory; nor did he see how, after my insistence, he could very well refuse. Finally, however, in an amusing, fatherly way he said to come to work if I wanted to, adding as a mischievous after-thought that for the first few days I was to be paid beginner's wages, "rather more than regular piece work rates," and that I need not follow the usual time schedule.

Regular work, however, was what I wanted, and seven o'clock the following morning found me walking upstairs to the rubber-shoe room. The foreman had come down "to do the honors," as he said. Not that he knew who I was, for he seemed to treat me as a "green hand" to be initiated. On the stairs he paused to say, "You are going to see things very strange to you, Miss, but just keep your self-confidence, and you will get along all right." His advice proved helpful. Too much consideration cannot be given the new employe, especially a girl. What seems so commonplace and usual to the regular force is full of newness and mystery to beginners. A kindness to them will win their lasting regard.

A very strange scene indeed was before me—the pounding and rolling and rattling, and the men and women, all strangers, working on queer-looking objects, with flying fingers. Could I fill one of these places and ever do work like this? I regretted that I had come.

But the forelady came up just then—she had the faculty of always being in the right place at the right time—and made me feel at ease. To make my start easier she placed me at a bench in one end of the room where she spent considerable of her time.

My first work was that of assisting a girl who had been making shoes at that bench for five years, a very sweet girl of about nineteen who had been compelled to leave school, she told me later, when her father died, because her older sisters were all married and could not help her mother. She saw nothing especially praiseworthy in this self-imposed duty; but to me she seemed a heroine, especially so since her sacrifice was long continued and unrecognized. We need a new gospel of work, which will exalt the worker's task and see heroism in the commonplace. Such heroes work in every factory, and I count it not the least valuable of my experiences that I came to know some of these.

Seated on a stool by the side of this instructor, my lessons began. And here also began a swift change in my ideas of rubber-shoe making. I never had supposed that a pair of rubbers contained so many pieces, but thought in a rather hazy way the rubber was poured into molds. I was, of course, surprised to find all the work done by hand. If consumers knew just how difficult it is to make a rubber shoe, they would not only be much interested in their rubbers but would be more willing to pay the price asked, a price which they now in a vague way believe simply goes to a "trust." It might not be practical to give demonstrations in the smaller towns, but at state fairs and in larger towns the showing how rubbers are made does seem to me to be practical. For the smaller stores I am wondering if an exhibit, a small case with glass top in which was arranged crude rubber, prepared rubber, a rubber shoe before assembling

and a completed shoe, could not with good results be loaned merchant after merchant, for perhaps two weeks' time each.

My instructor was a good pedagogue, with one essential quality highly developed—patience. She showed me just how it was



LUCY CASE GOWIN

done; it looked easy. But it wasn't. My hands grasped things in the wrong places, my fingers were clumsy, and oh, so slow!

To many of the readers of THE INDIA RUBBER WORLD the process of shoemaking is doubtless a very old story, but there may be some to whom it is as new as it was to me, so I will describe briefly my first experiences as a shoemaker. My first work, that on the linings, seemed to be approved, so the forelady soon brought me several queerly shaped tools, said I was to make a real rubber shoe before long, but first to watch my teacher with care. I did so. She first slipped the tan-colored lining over a wooden last shaped like a human foot. An insole was placed under the last, and the lower edges of the lining stretched evenly along the edge of this insole and pressed down with a steel roller. A black tape about an inch wide was then placed around the edge of the shoe, half on the sole and half on the upper part. This was called the "stay." The next step was to scratch the linings in front and behind with a sharp gauge. This was followed by capping the toe with a triangular piece of stiffening; and then came the large and small heel stiffenings.

The remarkable thing, to me, about all these pieces was that they stayed just where they were put, requiring only a little rolling to keep them permanently in place. This was due to the adhesive nature of the material, most of it being a sort of rubber cloth. To complete the first division of the work another thin sole was placed on the bottom and rolled.

All this looked easy under the skilful fingers of my teachers. But my first linings became stuck together while slip-

ping them over the last; the insole was wrong side out; the stay was placed too much on the upper, the large heel stiffening was hopelessly wrinkled; I had used the wrong combination on the gauge. Yet I was trying hard, very hard, to do it right, and had used an appalling amount of time. Every one of these processes, however, must grow into the worker's being. With the experienced girl, from the time the last is taken from the rack until the final seam is finished, there is no fumbling, no repeating, no wasted materials; every motion counts.

There was nothing which bothered me more than the extreme "stickiness" of the materials with which I worked. The "uppers," for instance, if allowed to roll up would stick to-

roll the stiff, thick rubber sole so it joins nicely with the upper. When this has been accomplished, the place where upper and sole meet is run over by a "stitcher."

I had now learned the elements of making rubbers. But I could as yet get up no speed, and it is speed that brings money. The girls are paid according to the number of shoes they make, *i. e.*, by piece-work. Some girls are of such slow-acting nervous organization that they never can develop speed. For instance, one hard-working girl near me after five years' experience could earn no more than \$5 to \$6 per week. Near her worked another girl who was able to earn \$12 per week. As for myself, I feel that after a few months I could have gotten into the \$10 class, but might add, too,



"MAKING UP" ROOM IN A RUBBER SHOE FACTORY

gether and consequently have to be "scrapped," *i. e.*, sent back to the rolling room as raw material. So I was watched and directed when it came to putting on uppers. The prepared sheet of rubber had to be lifted quickly, the front-top grasped between the teeth, and one side held in each hand, all without wrinkling. Then it had to be lowered over the upright last, and had to be placed exactly in the right place on the lining. Then it must be pressed down evenly and smoothly. This sounds easy, but a curling piece of sticky rubber is worse to manage than a schoolroom full of unruly boys.

The last process is putting on the outer soles and stitching. After the uppers have been smoothed out on the last and the whole "gassed," the outer sole is put on. This requires more muscle than any other process, it being very hard to

how glad I am that years of this struggle for speed in a rubber shoe factory do not stretch ahead of me.

I noticed a great deal of nervous tension among the workers, and a tendency to "burn the candle at both ends" by drinking tea as a stimulant.

Some girls, those of so-called slow mental co-ordination, never can do well at work requiring deftness of touch. Since such girls will be a loss to the factory which employs them, some simple psychological tests which can easily be given should be a part of all employment managers' equipment. But at any rate, my instructor had made twelve rubbers before I clumsily completed one. The forelady looked it over; dear woman, she pronounced it beautifully done. I was much encouraged, and did better each time, because I wanted to please her. In this is a point I think managers are inclined to overlook or minimize.

Women do not take the coolly practical view of work that men do, but in addition to wages they are swayed a great deal by personal relations. Has not many a woman toiled long years without pay for a worthless husband "because she loved him"? You cannot with women get the best work by appealing to wage alone. An employment manager, a foreman and a forelady who beam kindness and good nature and friendly interest have their influence upon production quite the same as the Saturday check.

The end of the first day at last arrived; I had earned fifteen cents. The second day's work was better; I earned twenty-five cents. This small compensation in my case, however, gave no trouble. My main interest was not in earnings but in knowledge of factory life for girls. I had long been interested in occupations for women and after deciding to write a book on this subject to be used as a text in high schools it seemed to me the only practical thing to do was to work in a factory. This was one of the lines in which I had not yet had experience at first hand. So, no matter what my salary was, my real compensation was in experience. And in that my rewards were ample.

There is much said today of "woman's sphere," and some good, old-fashioned people say women are "unsexing" themselves by their new demands. But the so-called woman's movement is not due so much to the will of woman as to certain significant changes taking place in industry. The women of our great-grandmothers' time spun and wove and canned and sewed. They were *all factory workers*. It is true they worked in their home, but the home was a workshop, the only factory there then was. One by one these activities were transferred from home to central places of extensive production—the "factory." In the home of today how few are left of the multiform activities of our great-grandmothers!

What were the women to do? What are they to do, for this moving of industries from home to factory is still going on? Women always have worked and they always will. Every sincere woman wants to feel she is good for something, that in this great, throbbing world she fills a place. When industry leaves the home and threatens to make of her a parasite, she follows her work to its new location.

The change of working place to a position outside the home, however, has revolutionized woman's world and presented some serious social problems. Just recently there has been considerable attention focussed on the minimum wage question, especially in its relation to the morality of female employes. This is a question of importance for which space will not permit any careful consideration here. But to those who look upon factories as places where girls are menaced it should be plainly stated that reliable investigation has proved that the question is most serious not with factory employes but with domestics. While all should be interested in making factory conditions wholesome, it should not be forgotten that it is no solution whatever to recommend domestic employment.

But the change to work outside the home, in the main, is beneficial. It has meant opportunities never before possessed, opportunities for education, for freedom, for development. One of the most noticeable effects is the liberating of the latent energies of women in the world of business and industry. Some radically demand immediate equality with men in all things. Others cling to old notions and prejudices concerning "the proper sphere for women." Both must realize that the question will not be settled by endless quibbling, but by whatever economic value their efforts prove to be to society.

Here arises the practical question, What kind of work is to be undertaken by the young girl during the average seven years between leaving school and marriage, by the women to whom marriage never comes, and by the thousands of dependent widows? The majority of girls in the elementary and high schools have no idea of what they are going to do; they are ignorant of the desirable vocations and how to prepare for them. Many,

consequently, do nothing. They look for a man instead, and it is because of this inefficient type that men are becoming wary. Those who do get positions, drift into them usually by chance and are poorly trained. As a result there are many misfits, many unhappy lives, and much loss to society in the form of talent and ability unused.

This state of affairs can be remedied. Since such a large number of girls must do something to support themselves, and since it is well for all girls to know how to support themselves if necessary, it is desirable for the public schools to interest themselves in vocational matters. Such courses might be given in both elementary and high schools, and should embrace vocational information and practical training.

When this is done, people will be less surprised when they hear of a person like myself working in a factory. There are now over one million five hundred thousand women and girls doing factory work in the United States. It is really no compliment to the intelligence and public interest of numerous friends of mine—some of them whose business it is as teachers to prepare young women for effective lives in this year 1913—to say: "How did you ever dare do it?" "How would you ever stand the cruel work?" "Did the foreman make you work, too, like those other poor creatures?" "Wasn't it a dreadful place?" Such remarks, and many others like them, do not harmonize well with the spirit of American democracy. What one million five hundred thousand women are daily doing should claim the intelligent interest of all people.

While I would have everybody know something of factory work, there is another point which it seems to me managers of rubber factories might carry out somewhat along this same line, and that is to have each employe appreciate how his work influences society at large. I knew a little about the rubber business before commencing my work in this factory. While finishing a shoe, my mind ran over the interesting history of rubber, how Goodyear experimented, how hard it was to get rubber made that wasn't sticky—of the workman, for instance, who thought that by dipping his overalls in a barrel of gum he would have some waterproof, never-wear-out trousers, but who had to be cut out of them at noon. And then there is the interesting story of how rubber is made, a really marvelous account of how, from the juice of a tree, our rubber shoes, coats, and tires are step by step prepared. And there is, too, the history of the factory in which one works; it is often something of which one has a right to feel as proud as of direct descent from some Saxon robber baron. If this information were given in some talks by the superintendent, or perhaps written up in a little pamphlet which was given to each employe and to every beginner when she first applied for a position, it would give dignity to the work which was done. Every worker ought to feel the great importance of rubber in the daily life of society. In this way the task before each humble worker will be lifted up as she sees herself exerting an influence which penetrates to the uttermost parts of the earth.

DRINKING ON THE FLY.

Aviation is serious business and is likely, as a rule, to require the aviator's entire attention. His two hands are needed, most of the time, at least, for the wheel, if he is to steer clear of the many dangers that beset his calling. But by the aid of a rubber tube he can console himself from time to time with hot coffee or any other drink. The liquid is placed in a metal tank with double walls which is suspended over the aviator's head, the contents of the tank being kept hot by water from the engine, which plays between the walls. A rubber tube with a suitable mouthpiece conveys it to the aeroplanist who sits below.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

AKRON is proud of Ralph Upson and R. A. D. Preston, daring young aeronauts who by winning the James Gordon Bennett trophy, emblematic of the world's championship balloon flight, brought fame to Akron and Akron products. Steps have been taken to bring about a monster public demonstration upon the return of the young men to Akron. Mr. J. E. Good, president of the Chamber of Commerce, has announced that he will call a meeting soon of the directors of the Chamber of Commerce for the purpose of discussing plans and a program.

This makes the fourth time that the championship has



THE WINNERS IN THE GREAT PARIS RACE.

been brought to the United States. September 30, 1906, Upson's cousin, Lieutenant F. P. Lahm, won the cup, after covering a distance of 402 miles. In 1909 E. W. Mix won the cup, covering 696.66 miles. Alan R. Hawley won it the third time, in 1910, covering 1,355 miles. In 1911 Germany won and in 1912 France secured the trophy.

The balloon, with the pilots, Ralph H. Upson and R. A. D. Preston, on board, landed near Flamborough Head, on the North Sea, within 200 yards of the edge of the dangerous Bompton Cliffs, which fall sheer into the sea.

When the "Goodyear" left Paris the weather was hazy and there was scarcely any wind. The balloon drifted across France slowly, in the direction of the English Channel. The coast was reached, in the neighborhood of Cherbourg, at midnight of the following day. The wind then freshened and the aeronauts sighted Southampton at 3 o'clock the next morning. A distance of 550 miles was covered in 44 hours.

The balloon crossed the English Channel from a point near Cherbourg and passed over the neighborhood of Southampton.

The bringing to America of the Gordon-Bennett Trophy Cup by Pilot R. H. Upson and Aide R. A. D. Preston, is sure to bring about a new era in aeronautics in America, according to Mr. F. A. Seiberling, president of The Goodyear Tire & Rubber Co.

"This achievement," Mr. Seiberling continued, "was only accomplished through the scientific handling of the balloon by these young aeronauts. They were competing with men of experience, and under foreign conditions that from the beginning were considered a big handicap. Mr. Upson has made a study of ballooning and was well informed on the various currents of air that were to be encountered along the coast. Upson and Preston have the honor of being the only two contestants who sailed their balloon outside of France. When the balloon 'Goodyear' headed for the Ocean Upson was familiar enough with the prevailing air current to know that counter-winds would be met that were sure to blow them back over the continent. This proved to be the case. They crossed the English Channel and traveled miles over the Atlantic, however, before these winds were encountered. Their scientific study of ballooning and the gas tightness of the fabric were the main reasons for enabling them to win.

"For some time we have been interested in aerial navigation, and we have promoted the aeronautical business from a scientific standpoint. We have encouraged balloon flights, as in this manner we are enabled to ascertain from actual experience the correctness of design and strength of the fabric."

The "Goodyear" is the same balloon that won the National Championship Balloon Race at Kansas City, July 4, 1913. It was also in the National race of 1912.

Mr. Seiberling, by the way, has issued a statement, emphatically and completely denying the widely published report of a merger of the Goodyear company with another.

The following paragraph, clipped from a Cleveland paper, is typical of reports that have been going the rounds of the financial columns of the newspapers:

"Old Goodyear Rumor Revived.

"U. S. Rubber made a rather sharp advance on the New York Stock exchange yesterday and the old rumor was revived that a deal is pending between this company and the Goodyear Tire & Rubber Co., of Akron. Nothing official was given out."

"There is not now and there never has been," said Mr. Seiberling, "any negotiations of any sort, between the Goodyear and any other company. There is not the remotest likelihood that there ever will be. The Goodyear Tire & Rubber Co. is just completing the largest year's business in its history. Its sales for 1913 will pass the thirty-three million dollar mark. The prospects for 1914 indicate continued substantial growth."

* * *

Claiming that his new idea will result in revolutionizing the automobile wheel and tire practice of the world, A. F. Priest, an Akron man, has recently received a patent on his invention called the "Elliptical Wheel." The wheel is being advertised and will soon be on the market. The Elliptical Wheel Co. has already been formed, with the following officers: A. F. Priest, Akron, president and manager; W. E. Marble, Chicago, vice-president; A. L. Kanagy, Chicago, secretary and treasurer.

Each spoke of the new wheel is made of steel and is shaped like the letter "S." The outside diameter of the hub is large, and the distance between the hub and rim is comparatively short. The rim is of steel and is about 7/16 of an inch in

thickness. Each "S" spoke is placed in the wheel under 250 pounds pressure. When at rest the wheel is perfectly circular, but when under pressure it assumes a slightly elliptical form, thus expending all concussion force on a line at right angles to the line of pressure. In this action vibration, declared to be the most expensive evil in the wheel using world, is eliminated.

Speaking of his wheel and its merits, the inventor says: "The Elliptical Wheel embodies a shock absorbing principle in which the forces of concussion are utilized to create traction, reducing rebound of wheel from impact, as compared with properly inflated pneumatics, by more than 50 per cent., all conditions of speed, load and force being equal. Ordinary solid tire mileage is largely increased due to yielding wheel center.

* * *

The annual convention of the Firestone Tire & Rubber Co., held at the home office in Akron, October 7-10, was attended by over 200 branch managers, salesmen and representatives of the firm. The first day of the convention was devoted to welcoming the out-of-town guests. On the second day the branch managers held a meeting, and the next two days were spent in business discussion, in the formation of plans for the future, and in visiting the plant, which has been considerably enlarged since the last annual convention. The convention was concluded by a banquet, and all who attended returned to their work better prepared for its successful execution and with renewed enthusiasm.

This company reports that it is about to open two additional branches, one in Rochester, New York, and the other at Des Moines, Iowa. In addition to carrying a complete line of Firestone tires, rims and accessories, the Des Moines branch will be equipped with the necessary machinery for repairing wheels and applying tires—constituting a service station. It will be the distributing point for Iowa and parts of both Minnesota and Missouri. The Rochester branch will carry a stock of tires and rims for local use.

* * *

At the annual meeting of the Swinehart Tire & Rubber Co., three new members were added to the Board—Fred H. Snyder, of Massillon; Charles Currie and T. E. Barry, of Akron. They replaced Oliver Toomey of Canal Dover, and T. E. Borton of Cleveland, who declined re-election owing to other business affairs. There had been one vacancy on the board.

Earnings for the year ending August 31 were reported as approximately \$120,000. Of this, \$48,000 will be required for dividends. Net earnings for the year were about \$200,000 on the \$800,000 capital stock. None of the increase in stock—from \$800,000 to \$1,000,000—will be disposed of at this time, and is to be offered first to stockholders when it is finally offered.

* * *

At the annual meeting of the stockholders of the McGraw Tire & Rubber Co., held at the company's office at East Palestine, Ohio, on October 7, officers were elected for the year as follows: E. C. McGraw, president; R. W. McGraw, vice-president; John Morgan, treasurer; L. M. Kyes, secretary. These officers, together with Lenore H. McGraw, J. C. Chamberlin, George Flaccus, R. F. Taggart, James C. Chaplin, John S. Wilson and F. H. Rea, constitute the board of directors. The report of the treasurer showed the company's business for the year to have been in excess of \$2,000,000.

* * *

The change of policy announced by The Portage Rubber Co., Akron, Ohio, is designed to reduce the cost of marketing its product, as well as carrying so many accounts. Portage tires are now offered to customers in Akron and vicinity through

the factory representative, The Portage Rubber Sales Co., Garfield Hotel Bldg., Akron, Ohio.

* * *

A cut of 20 per cent. made by the Falls Rubber Co., Cuyahoga Falls, on certain work on a special tire which they put out, resulted in dissatisfaction among the workmen, twenty of whom are reported to have left the company's employ as a consequence. The company claimed the cut in prices was made because of simplification of the work; the workmen asserted that it was due to the company's having underbid on a job and that the prices paid by the company before the cut averaged about the same as those of other Akron factories.

* * *

By action of the Council, the City of Akron has agreed to take over Buchtel College as a municipal institution, to be known and maintained as the University of Akron. The institution will be widened in scope, tuition being free to residents of the city. This College is widely known for its splendid course in rubber chemistry, which department will be even more extensive and thorough than before.

* * *

The moving picture companies have been showing films of the local rubber industry, as well as of school fire drills, etc., and at a recent photo-play were shown the Goodyear and Firestone plants, the children of the town between 7 and 15 years of age being invited to a free performance. Needless to say, this particular performance was well attended and proved very instructive and entertaining.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS in the rubber industry is in a most lively and prosperous condition. New England had a "spell of weather" for more than half the month. When it wasn't foggy it was rainy, and sometimes when it rained it poured. Just for a change there was one snow storm, and some few dashes of hail. Taken altogether it was just the weather to give people generally the blues, but which gladdened every retailer of rubber clothing and footwear. The clothing people were almost snowed under with orders, and the footwear jobbers and manufacturers were similarly affected.

The factories were called on for their reserve stocks, and trade received a send-off which helped amazingly. In the line of druggist's sundries, the two syndicate drug store concerns have been competing with each other, and by means of cut prices, large amounts of hot water bags, fountain syringes and similar goods, as well as hard rubber specialties have been distributed quite liberally among consumers; which must have its effect on the manufacturing end. The tire men are turning out their customary seasonable quota, with some of them in receipt of large orders for future shipment. Belting and packing specialties are moderately called for, and hose, while not going out very liberally, is being ordered for early spring shipment.

* * *

The addition to the Art Museum, given by Mrs. Evans, in memory of her husband, Robert D. Evans, known to rubber men all over the country, is now approaching completion, and will have a fitting setting by the laying out of a park approach which will allow the full beauty of the edifice to be seen and properly appreciated.

* * *

The Lynn Rubber Co., is manufacturing a rubber heel that works on the partial vacuum principle, which is having a good sale, as are also the rubber shoe soles made by this company. The concern has adopted the word Lynco as a trade mark, which,

having been duly registered, will be applied on all goods made by the house.

* * *

Rubber cement is a mighty convenient and useful preparation in the arts and manufactures, but it is mighty dangerous at times. Twice last month it was responsible for serious accidents in the vicinity of this city. Out in Malden, at the works of the Ellis Cement Co., Herman C. Ellis was pouring cement which had just been taken from a gasoline stove. The cement became ignited, and his clothing caught fire. He rushed from the building and rolled in the sand, extinguishing the flames but not before he had been severely burned. An employe entered the building just in time to be knocked unconscious by the bursting of a small tank of gasoline, but was rescued. During the fire, a hoseman was overcome by the heat. Both these men were badly burned about the face and hands and their clothing ruined. Luckily a large tank containing 400 gallons of gasoline, at one time surrounded by flames, was prevented from exploding. The loss was about \$500.

* * *

A less severe accident, in point of personal injury, but of greater money loss, was at the factory of the A. R. Hyde Shoe & Slipper Co., at Cambridge. A barrel of cement in the cellar was discovered to be leaking, Mr. Hyde and his son were gathering this overflow, when it suddenly burst into flame, and communicating with the barrel caused an explosion, in which both men were slightly burned. The building was damaged about \$500 and the stock \$1,500.

* * *

And speaking of rubber cement reminds us that its cost is such that substitutes are being sought for, and are already used extensively. Mention was made last month of the almost universal use of ground cork, mixed with rubber cement, as a filler between the soles of Goodyear welt shoes. Most manufacturers of this class of footwear purchase these ingredients separately, and mix them as needed, not keeping any great amount on hand, owing to the rapid evaporation of the solvent, and the consequent "caking" of the mixture. But the shoe business is in such condition today that economies in even small things are considered, and now there are mixtures or compounds which use some sort of glue, or similar substances, in place of the more expensive rubber cement.

* * *

The Enterprise Rubber Co., of this city lives up to its name. During the reign of the "hunters' moon" one of its windows was handsomely arranged with a display of the large variety of hunting apparel and accessories, while the other window was devoted to a full assortment of Candee rubbers. Practically every shape of rubber made by the L. Candee company is shown in the display, nearly 200 individual shapes and styles being included. Manager Proctor was a busy man, and so was every member of the store force during the rainy weather last month.

* * *

The Monatiquot Rubber Works, the Naturalized rubber manufacturers, of South Braintree, Massachusetts, are proceeding with the installation of an underground coal conveying system. This will be used to automatically handle and carry coal from the Rubber Works siding to the power houses, a distance of three to four hundred feet. When completed, it will form another of the many modern labor saving devices with which this company is now especially well equipped.

SMALL SUCTION PUMP TO EMPTY HYDRANTS.

There is no limit to the uses to which it is discovered rubber hose can be put. A quite recent use is in connection with a small suction pump used by the fire departments in the winter to test the hydrant standpipes and occasionally to empty them to prevent freezing. These pumps come in various sizes and are equipped with special suction hose, usually about 12 feet in length.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

PRESENT conditions in the rubber industry in this vicinity are reported as being the best for some time, comparing favorably with similar periods in previous years. Not only are the automobile tire manufacturers busy, but the approach of winter weather has caused a material activity among the makers of rubber boots and shoes, and large shipments have been made during the last few weeks. Orders are being received in good volume, and the wholesalers are reported as being ready to place further large orders if they can be assured of prompt deliveries.

* * *

Early in the month the National India Rubber Co., at Bristol, changed its working schedule in order to effect economy in artificial lighting. Under the new schedule the working day will end at 5 o'clock in the afternoon instead of at 6 o'clock, making 54 hours a week, the Saturday half holiday being discontinued. Shipments from the factory of this concern, especially of shoe products, showed quite a gain during the first half of the month, the long siege of damp weather increasing the demand.

The work of enlarging the wire insulating department of the National Company's plant is in active progress. During the first week of the month two new machines, each weighing twelve tons, for manufacturing the various sizes of cable wire for electric lighting and power purposes, were received at the factory. The new building that is being erected in connection with the wire department is nearing completion and will be ready before the arrival of cold weather. The shipping room of this division is completed and is being furnished for immediate use.

* * *

The Bourn Rubber Co. has been granted permission for the erection of a one-story brick workshop at its plant on Westfield street, this city. The plans are now being drawn for the proposed structure, which will conform to the other portions of the plant.

* * *

A complimentary dinner was given to Col. Samuel P. Colt, president of the United States Rubber Co., by the directors of the Industrial Trust Co., on Saturday, Oct. 4, at the Squantum Club. The feature of the occasion was the presentation of a handsome silver loving cup to Col. Colt. The cup was of unique design and on it were the names of the members of the board of directors with the signature of each as written by himself.

The beautiful and unique entrance to Col. Colt's country residence at Pappoosequaw Neck, Bristol, Rhode Island, has been completed and was unveiled in the presence of a party from all sections of the state at noon on Saturday, September 27. The design of the entrance is French in character, the main pedestals being adapted from the sentry boxes guarding the approach to the Petit Trianon at Versailles, the favorite residence of Marie Antoinette and famous for the beauty of its design. These pedestals are of Georgia marble, 10 feet in length, 4 feet wide and 9 feet high, and the east fronts are ornamented with niches and garlands of oak leaves. Massive marble balustrades curve outward to the street line from the central pedestals, ending in smaller urn-surmounted pedestals, which bear on their main faces an inscription reading: "Colt Farm. Private Property. Public Welcome." Between the pedestals and under the balustrades are curving marble seats and low copings of marble running along the street line for about 40 feet each way, the total length of the structure being 146 feet.

Each main pedestal is surmounted by a massive bronze bull, over six feet in height and weighing more than 2,000 pounds. These were made from models by Jules Isidore Bonheur and

were cast by the famous Val d'Osne Co., of Paris. These bronzes were imported direct by Col. Colt at a cost of \$7,000, and the completed entrance represents an outlay of more than \$30,000.

* * *

A. M. Bannister, local agent of the Goodyear Tire & Rubber Co., stole a march on his associates recently by quietly becoming married. It was more than two weeks before they became aware of the change in his affairs, but having learned thereof they proceeded to make amends by presenting him with a handsome mahogany dining table.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

THE old adage, "The darkest hour is just before the dawn," is applicable at the present moment to the condition of the Chicago rubber market in some lines—especially to dealers in footwear. The fall season is practically at a close, and the salesmen await only a change in the weather to usher in the new season. "News? No, really nothing of interest this month. Just put me down on the list with those praying for an early snowstorm," is the general answer given to all inquiries concerning the condition of trade. But according to W. E. Carver, of the United States Rubber Co., Chicago will have an early snowstorm. Mr. Carver has a reputation among his friends as a weather prophet; in fact, those who know him say they would put as much faith in a weather prophecy of Carver's as they would in the prediction of the official weather man.

To cheer those in the rubber clothing line who may be inclined to feel pessimistic, Mr. Halaburt, manager of the local agency of the Chicago Rubber Clothing Co., is decidedly optimistic. Mr. Halaburt is a veteran in the rubber industry; in fact, he has been with the present firm twenty-eight years. Hence his prophecy that a brisk season is the outlook may be regarded as substantial authority. This seemingly dormant state by no means applies to all branches of the rubber trade. For instance, the demand for rubber tires continues brisk.

* * *

The manufacturers of rubbers are complaining about the sudden changes in the styles of shoes. One season the high heel is worn, the next the medium, and this season the clamor is for the low, flat heel. If the manufacturer could only in some way predict the duration of these styles, the difficulty of having a surplus stock of old styles might be done away with, but this seems impossible. To cite an instance: Only last week one of Chicago's largest houses closed out a lot of the best grade of rubbers (made to fit the Cuban heel) at ten and fifteen cents per pair.

* * *

The Tango and other dances of this type have taken Chicago by storm and without a doubt will furnish the chief amusement of the winter season. This innovation is producing a large sale of the tango shoe—a type of tennis shoe.

* * *

The W. D. Allen Mfg. Co., is at present putting a new steel hose clamp on the market. It will appear under the name of the "Allen Galvanized Hose Clamp." In the words of the manager, "This is bound to be a winner." In addition to its high utility the price will be moderate, which should further commend it to the use of the consumer.

Mr. Allen, president of the company, and Mr. Pease, the treasurer, have left for a business trip in the East.

* * *

Salesmen are beginning to start out on their regular trips, giving the country merchant opportunity to place his size-up

orders. The United States Rubber Co., the Standard Rubber Co., The Quaker City, the Revere, the Rubber Manufacturing and Distributing Co., and in fact all the jobbers, are completing their salesmen's sample lines and sending them out as rapidly as possible.

* * *

The Apsley Rubber Manufacturing and Distributing Co., reports a visit from the president of the firm, Mr. L. D. Apsley.

* * *

Chicago is infested with a multitude of raincoat emporiums, nearly all of which advertise to be an "outlet" for one or more of the big manufacturing concerns of the east. One well known name in the rubber trade appears more frequently than the others and the unsuspecting wayfarer would almost be led to believe that the particular company represented by this name had a monopoly of all the rubber business in the United States. So far as anyone can tell from reading the advertisements and window cards, nothing in any of these stores is sold at a regular price. Everything seems to be marked down to an absurdly low figure and it would appear that all these stores are constantly on the brink of bankruptcy.

* * *

Automobile row, extending up and down Michigan avenue, is flourishing and sales are reported as being large. Accessory dealers also report a good business, particularly those who handle automobile tires. The demand is about equally distributed among all grades and sizes, altho the sudden increase in the sale of small machines has about doubled the call for the smaller sized tires.

* * *

Inquiries among the proprietors of the shoe shining "parlors" bring the information that the use of rubber heels, rubber soles and inlaid rubber soles is on the increase, especially the use of rubber heels. The rubber specialty houses are doing a large business with the "repaired as you wait" shoe shops, which are not infrequently operated in conjunction with shoe shining and often by the same management. The persistent advertising of the rubber heel manufacturers is bringing its reward, in Chicago, at least.

* * *

Rubber has made another contribution to the general propaganda for hygiene and sanitation. Many drug and novelty houses are making prominent displays of a rubber "finger" toothbrush that at least has the merit of economizing space. It has long, pointed rubber "bristles," and the contrivance is slipped over the index finger while in operation, just like the stalls that doctors used to prescribe to protect a crushed or wounded finger from further injury. Each brush comes in a separate metal box, the whole fitting easily into a vest pocket or a lady's purse. Some of the stores are devoting whole windows to the display of this article.

* * *

The process of erecting a number of enormous office buildings is now under way in Chicago, and in many of these rubber tiling is being laid in the upper hall floors as a sound deadener, taking the place of the more common tile flooring.

* * *

A Jackson Boulevard stationer recently had a novel window display that engaged the amused attention of nearly every passerby. The window was filled with almost two hundred rubber dolls, male and female, and of every kind and type. They were arranged in artistic groups, each kind to itself. In the front was a large group of "men" dolls, wearing tiny band uniforms. At the back of the window space was a broad strip of rubber, across which was painted in red letters: "We have all kinds of rubber bands."

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

THE fourteen exhibit buildings at the fair grounds of the Panama International Exposition have been commenced and will be completed on or before the 14th of July, 1914, so that there will be eight months at least for the installation of exhibits; and President Moore of the Exposition states positively that every feature of the fair will be complete in all details upon the scheduled opening day, February 20, 1915.

* * *

The Gorham-Revere Rubber Co. made an application recently to have its name changed to the United States Rubber Co. of California, and the application has been granted. In conjunction with this action, taken by the United States Rubber Co., which owns the Gorham-Revere Rubber Co., the business of the United States Tire Co., in this territory has been merged with the United States Rubber Co. of California. The object is to avoid confusion as to names and by means of the larger and more compact organization to more efficiently handle the enormous tire and rubber business of this coast. The following officers were elected: C. C. Case, president; J. B. Brady, vice-president and general sales-manager; W. H. Gilbert, secretary and treasurer, and C. A. Gilbert, manager of the tire department. Following this merger, the branches throughout the entire coast have generally been enlarged to meet the new conditions, and two new branches have been added, one at Fresno, California, and the other at Phoenix, Arizona. This makes branches at Los Angeles, Phoenix, Fresno, San Francisco, Portland, Oregon; Seattle and Spokane, Washington, and Osaka, Japan. In most of these places both the Gorham-Revere Rubber Co. and the United States Tire Co. had branches, and these have also been merged. The merger makes this company one of the most prominent tire concerns in the west. At the headquarters in San Francisco, the general offices and wholesale department of the United States Tire Co. have been moved down to the old location of the Gorham Revere Rubber Co., on Fremont street.

* * *

The Bowers Rubber Works report that the factory is now being run at full capacity, under three eight-hour shifts. The firm has recently placed an order for 32,000 feet of fire hose, in San Francisco. Mr. Bowers is at present on a visit to the east where he is getting in touch with eastern machinery and supplies.

* * *

The Pacific Mill & Mine Supply Co. has taken the agency for the Rubber Filled & Covered Belt line. The agency for these belts was formerly vested in the Electric Hose & Rubber Co., of this city, which firm has discontinued its store on Howard street and as it no longer carries stock has moved into an office building, handling lines hereafter only as manufacturers' agents.

* * *

Baker & Hamilton, large wholesale hardware dealers, have added a new automobile tire department, and have been appointed western agents for the Savage tires. This concern has a thorough selling organization covering the entire coast, and W. S. Smith of the firm states that they are going into the tire business on a large scale.

* * *

B. H. Pratt, manager of the Fisk Rubber Co.'s Pacific Coast branch, has recently returned from an extensive trip of two months in the east and states that while there may be a tightness in the money market there he failed to note any indication of hard times, the manufacturers certainly not experiencing any such condition and his own company enjoying not only satisfactory but largely increased business.

R. S. Pease, Jr., treasurer of the Goodyear Rubber Co., has been chosen general manager of the business, besides holding the office of treasurer. Howard Middleton has been appointed manager of the sales department of the company.

* * *

The American Rubber Company's plant at Emeryville, California, came very near being destroyed by fire a week or so ago. A fire started in the engine room and gained considerable headway before being discovered, and by the time the alarm was turned in and the fire department responded there was a fierce blaze which was extinguished with difficulty. The total damage was estimated at \$500, fully insured.

* * *

W. J. Kent, manager of the horseshoe pad department of the Revere Rubber Co., is now visiting on this coast.

* * *

The B. F. Wade Tire & Rubber Co. has been incorporated in Los Angeles, with a capital stock of \$50,000 by B. F. Wade, C. E. Crozier and H. Newman.

W. F. Simpson of Los Angeles has sold his vulcanizing plant to E. W. Linn.

The California Tire & Rubber Co. has opened a branch store in Los Angeles, at 752-754 South Olive street, of which A. B. Bush has been appointed manager.

A store has been opened in Los Angeles by George E. Bennie for the distribution of Imperial and Pullman tires in the territory west of the Mississippi river.

* * *

The Santa Anna Vulcanizing Works of Santa Anna, California, has been sold to Drake & Pearce.

* * *

The Western Rubber & Supply Co. has removed from its old location at 66 South Fair Oaks street, Pasadena, California, to much larger quarters at 55 West Colorado street. This company has had the agency for Federal tires, but in the new location another brand is to be handled.

* * *

C. C. Miller has been appointed manager of the branch at Spokane, Washington, of The Goodyear Tire & Rubber Co., of Akron, Ohio—succeeding W. C. Ruckert. Mr. Miller has been for the past three years northwestern coast salesman for this company.

* * *

Ed. Fleming, formerly connected with the San Francisco branch of the United States Tire Co., has succeeded R. E. Dougherty as manager of the company's Seattle section, the latter becoming associated with the selling staff.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE Ajax-Grieb Rubber Co. of this city has just completed the sixth year of its business in this city and will shortly submit to the board of directors of the concern a report showing the most extensive operations in any single year in the history of the company. Not only has the Ajax-Grieb company enjoyed its most prosperous year, but indications point to an even greater success for 1914, and plans are being made accordingly. During the past twelve months the company has found it necessary to increase the working force of operatives from three hundred to four hundred. The company expects to add about fifty to the force during the next year. The past month \$15,000 worth of new machinery was installed. The daily output of the tire department is 650 automobile tires.

Because of the rapid growth of the business, William J. Grieb, president of the company, recently disposed of his interests in other ventures and now devotes his entire time to the management of the Trenton factory. The company has offices in New York City and other important trade centers of the country. A branch was recently established at Dallas, Texas.

Joseph P. Hickey, traveling representative for the Acme Rubber Manufacturing Co., covering Maryland, West Virginia, Virginia, the Carolinas, Tennessee and the District of Columbia, reports trade conditions unusually good in that section of the country.

Edward Cornell Murray, son of General C. Edward Murray, treasurer of the Crescent Belting & Packing Co., and the Empire Tire and Empire Rubber Co., is to wed Miss Mildred Apgar, daughter of former Prosecutor W. Holt Apgar, this month. The wedding is to be one of the fashionable events of the autumnal season in this section.

The new brick and steel three-story building being erected by the Woven Steel Hose & Rubber Co. of this city, to replace the one destroyed by fire July 4 last, will be ready for occupancy within another month. The building is being made fireproof and fitted with every modern factory convenience.

The Empire Rubber Co. is building an addition to the boiler house of the plant at a cost of \$2,000.

A permit has been issued to The Empire Rubber & Tire Co., of Trenton, for the erection of an addition to its boiler house on East Clinton avenue. It is estimated that the cost of this addition will be about \$1,400. At a recent test in New York City of double-jacket fire hose, preparatory to the placing of contracts, the product of this company stood a test of 1,000 pounds pressure.

A quantity of material consigned from Rotterdam to the Katzenback-Bullock Chemical Co., of Trenton, was lost in the fire which destroyed the steamer "Vultarno" early in October.

In a recent report of Director of Public Safety Frank Hague to Jersey City council, a request is made for equipment which includes the following items: 10,000 feet of hose; new wheels and rubber tires for engine 12; new rubber tires for engines 14, 15 and 16, and for tenders 5 and 6.

THE ASBESTOS AND RUBBER WORKS OF AMERICA ENJOINED.

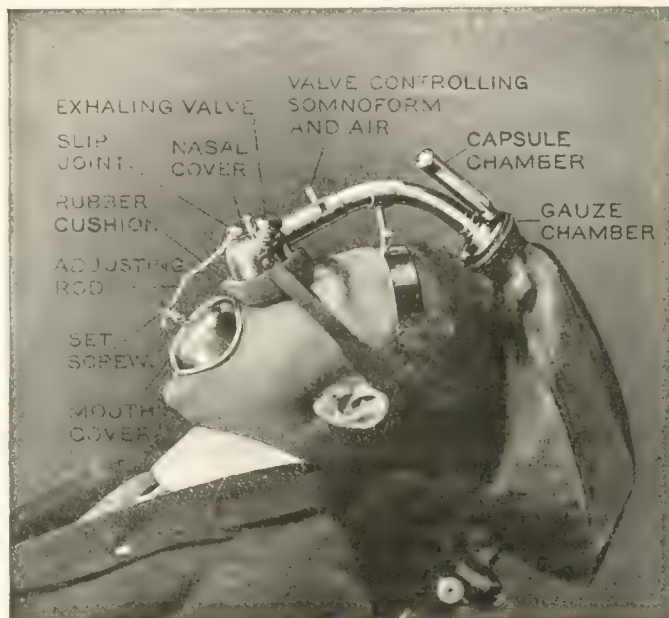
A petition was filed in the court of chancery at Trenton, New Jersey, on October 25 by John H. Scudder, president of the First National Bank of that city, asking for the appointment of a receiver for the Asbestos and Rubber Works of America with office in New York City and factory in Camden. Mr. Scudder charging that the company could not meet its obligations. The court granted an injunction restraining the company from continuing business and also compelling it to show cause why a receiver should not be named. The total assets of the company are given at \$43,000 and the liabilities at \$49,000.

A RUBBER TUBE AS A LIFE SAVER.

There is a young boy in Connecticut who can thank the manufacturers of rubber hose for the fact that he is alive today. A little while ago he was taking a swim in the water at New Haven, near tide gates erected at a certain point to protect the meadows from overflow, and being bent on some "stunt," as is the habit of boys, he got his foot caught in the mechanism of the gate. He couldn't extract his foot; neither could his companions or anyone else who came to his assistance, altho the police department and the fire department both came to his aid. In the meantime the tide was rising. But somebody bethought him of a rubber tube, which was passed to the boy, who put one end of it in his mouth and held it there for several hours, while the tide rose to a considerable height above his head. After a long delay the gate was broken open and the boy's foot released; but the rubber tube that supplied him with air while he was entirely immersed was the thing that saved his life.

THE DE FORD NASAL SOMNOFORM INHALER.

THE fact that rubber lends itself readily to aseptic treatment renders it particularly adaptable to use in dental as well as surgical operations; and the accompanying illustration shows the important part it plays in contributing to painless dentistry. This apparatus is designed for the inducing of analgesia or anaesthesia by the nasal administration of somnoform, and, as will be observed, rubber enters largely into its construction, being employed in the ring or soft pad which adapts the nasal cover to the face and also in the bag which contains the somnoform vapor.



THE INHALER IN OPERATION.

The vapor is conveyed from the rubber bag to the nasal cover by means of a metal tube which extends between the two, passing over the head, and in which is situated a lever-operated valve that permits the regulation of the supply of somnoform administered and the admission of air if desired. The somnoform is projected into the rubber bag by means of a metal screened capsule chamber, situated just above the union of the bag and the metal tube, and lined with surgical gauze, in which the somnoform capsule is placed, a slight tap on the cover of this cylinder breaking the capsule and causing the somnoform to fall on the gauze and thence being conveyed to the vapor bag below, the metal screens catching the particles of glass. This appliance is secured by means of a strap, which is passed firmly around the head. Not only the rubber portion of the apparatus, but the metal parts also, if wiped dry while hot, may be sterilized by immersion in boiling water, and it can very readily be taken apart for this purpose. [E. DeTrey & Sons, Philadelphia.]

RUBBER HOSE FOR CARRYING GASOLENE.

On account of the destructive effect of gasoline on rubber it has been found difficult to obtain a suitable hose for carrying this liquid from one point to another and still have the hose last long enough to pay for its installation. However, after considerable experimentation one company claims to have solved the problem by producing a hose especially adapted to conduct gasoline from the storage tank to the car by means of a pump. It is said that the hose—which is known as the "Arcadia"—has been rated as standard for this purpose by the National Board of Fire Underwriters. [New Jersey Car Spring & Rubber Co., Jersey City, New Jersey.]

News of the American Rubber Trade.

ENLARGED EQUIPMENT FOR THE ACUSHNET PROCESS CO.

THERE have been continual complaints from manufacturers purchasing Ceylons that different lots of this rubber vary widely in efficiency, and variations in the same lot are not unusual. It has long been the desire of the trade, and incidentally the producers, to standardize these products in some way, so that the manufacturer purchasing a certain brand can always feel confident of obtaining unvarying results.

The Acushnet Process Co. of New Bedford, Massachusetts, has found a means of standardizing these rubbers, and is rapidly equipping to take care of the demand. The power plant is being changed over for the installation of electric drives throughout the factory, General Electric Co. generators and motors being installed to operate on a 220 volt, 60 cycle, alternating current.

The new combination office and garage has already been completed, and a three-story factory building, 60 x 60, is in course of construction. The new factory building is laid out as a unit of a system of buildings that will ultimately take advantage of all the available land now owned by the company, thus insuring development along scientific lines and economical operation from the start.

The company is finding a very active demand from manufacturers for reclaiming their uncured friction stocks by solvent processes in place of the old acid treatment. A more useful grade of rubber is obtained, which shows practically no signs of vulcanization by the use of this method.

The well known brands, "Hidalgo" and "Fairhaven" rubbers, are meeting with a satisfactory demand from the trade. The "Acushnet" brand rubber, a treated Ceylon, is quite out of the ordinary, and the officers of the company are very sanguine of the interest manufacturers will take in this product, which is to be immediately introduced.

PURE DRINKING WATER FOR WILLIAMS WORKMEN.

Safe drinking water for the employes of The Williams Foundry & Machine Co. is insured by a new system just installed.

Water is pumped from a deep well on the property to a sterilizing plant on the top floor. The sterilizer, which is of the type used by the government in the army, in Cuba and in the Canal Zone, as well as by leading hospitals, purifies the water by the boiling process. After boiling, the water is quickly cooled and aerated so that it is delivered bright and sparkling without the flat taste common to distilled or boiled water.

The machine cools the water to a proper drinking temperature and there is an arrangement for further cooling when necessary, without direct contact with ice.

After leaving the sterilizer the water flows through galvanized pipes to sanitary drinking fountains of the bubbling type, conveniently located about the factory.

GOVERNORS ELECTED FOR THE REPUBLIC CLUB HOUSE.

It will be recalled that a picture was shown in a recent number of THE INDIA RUBBER WORLD of the new club house erected by the Republic Rubber Co., of Youngstown, Ohio, for the benefit of its employes. The club house was recently completed and ready for use and on October 16 an election was held to select five members from the Republic factory hands to act, in connection with three appointees made by the president, as a Board of Governors for the club. There was great interest manifested in this election and not a little electioneering. The five governors chosen were: Oscar Watkins, C. A. Miller, Daniel Evans and J. Deiter from the factories, and C. C. Porter of the general offices.

THE CINCINNATI RUBBER MANUFACTURING CO. INCREASES ITS PLANT.

The Cincinnati Rubber Manufacturing Co. is at the present time doubling the capacity of its boiler house. This is but the beginning in carrying out plans for the enlargement of the whole business of the company. Later there will be quite extensive additions to the machinery and general equipment of the plant, in order to take care of the increased demand for the company's products.

THE FISK COMPANY'S SUCCESSFUL YEAR.

The Fisk Rubber Co. of Chicopee Falls, Massachusetts, has had a very successful year. Its report covering the fiscal year ending October 31 has not yet been issued, but it is believed that when it is it will show a net profit for the year of about \$900,000, which is sufficient to cover the 7 per cent. on the \$3,000,000 preferred stock and to pay a like dividend—if the company should so elect—on the common stock. The company has been making 1,800 tires a day but with the increased equipment recently installed will be able next year to make 2,500 tires a day.

THE PORTAGE COMPANY DOUBLING ITS TIRE CAPACITY.

The Portage Rubber Co., of Akron, is preparing to double its capacity for auto tires and tubes for next season. It is now erecting an additional building 50 x 107 feet, of steel and brick construction and three stories high. The first floor will be used for storing crude rubber, the second for an additional calender and six new mills—which will be motor driven—and the third floor will be used as an additional tire building room.

A HANDSOME LITTLE DERBY CALENDAR.

The Derby Rubber Co., of Derby, Connecticut, sends its customers a small monthly calendar the size of a desk pigeon-hole which is an attractive piece of work even if in miniature. It is printed in dark green on a cream colored ground, which in turn has a green mount. The upper part of the calendar for October is occupied by a process print, very handsomely colored, giving bust and head view of a comely young woman—the whole being tied with a green silk ribbon.

RUBBER COMPANY DIVIDENDS.

The Batavia Rubber Co. on October 1 paid dividends on its preferred and common stocks of September 15 record—a regular quarterly dividend of 1½ per cent. on the preferred; and on the common a regular quarterly dividend of 1 per cent., with an extra dividend of ½ per cent.

The Lee Tire & Rubber Co. on October 10 paid a regular quarterly dividend of 1¾ per cent. on stock of record October 1.

On October 2 the board of directors of the United States Rubber Co. declared a quarterly dividend of 2 per cent. on its first preferred stock, a quarterly dividend of 1½ per cent. on its second preferred stock and a quarterly dividend of 1½ per cent. on its common stock—payable October 31 to stock of record on October 15.

A NEW RUBBER IMPORTING HOUSE.

As this number goes to press it is learned that a new rubber importing house is in process of organization. Altho the details of the project are not yet ready for publication, it is known that the company will be composed of men who have been well known in the rubber trade for some time and who have had wide experience in this line. In our next issue we shall probably be able to give the details of the organization as well as the names of the men who will compose it.

TRADE NEWS NOTES.

Plans have been prepared for an addition to the plant of the Batavia Rubber Co., of Batavia, New York, construction estimates being based on a structure 85 x 101 feet, two-stories and basement. The cost of the added factory will probably be about \$35,000.

Contracts for 2,000 feet of fire hose were recently placed by the fire department of Columbia, South Carolina, the Eureka Fire Hose Co., and the Fabric Fire Hose Co., receiving orders for 1,000 feet each.

The Ten Broeck Tire Co., located at Louisville, Kentucky, and manufacturing motorcycle and automobile tires, is reported to be meeting with success. This company was organized several months ago, with a capital stock of \$250,000.

In addition to the new Morgan & Wright plant recently completed at Detroit, and of which they have taken possession, the erection of another building of equal size has been decided upon, to be finished about April 1. These buildings provide floor space of 400,000 feet each.

The plant of the McGraw Tire & Rubber Co., at East Palestine, Ohio, is soon to be enlarged by the erection of an additional factory building.

The firm of Cutler, Spack & Co., wholesale rubber dealers of Chelsea, Massachusetts, has removed its office and warehouse to 193 Second street, where it is much better equipped than heretofore to advantageously take care of its business.

The India Rubber Co., has been organized at New Brunswick, New Jersey, for the manufacture of tires. The officers of the company are: J. C. Wilson, president; Charles A. Hunter, vice-president; W. L. Wild, secretary-treasurer. It is expected that production will commence by December 1.

The Endurance Tire & Rubber Co., of New Brunswick, New Jersey, has opened a sales branch on Boylston street, Boston, with John L. Hamilton as manager.

A three-story addition to the plant of the C. A. Shaler Co., of Waupun, Wisconsin, is under course of erection and when completed will be devoted to the manufacture of the garage steam vulcanizer put out by this company about a year ago. This addition will afford facilities for double the present output.

The Dayton Airless Tire Sales Co., of Hamburg, New York—of which John Schoepflin is president and Paul Schoepflin secretary—has filed dissolution papers with the Secretary of New York State. This company was incorporated early in 1912, with a capital stock of \$10,000.

The National Tire & Rubber Co. is to erect a large factory at East Palestine, Ohio, to be devoted to the manufacture of automobile tires and inner tubes. This building, for which contracts have been let, is to be 44 x 252 feet, two stories high, of reinforced concrete.

The Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has established local agencies for its tires with the Lee Tire Sales Co., of Newark, New Jersey, and the Lee Tire & Rubber Co., of 1491 Bedford avenue, Brooklyn, New York.

A fire which resulted in the destruction of the entire stock of the Ellis Rubber Cement Co., Malden, Massachusetts, and injury to three persons, occurred on October 8, caused by the superheating of naphtha in a mixture of hot cement in the hands of one of the proprietors, Herman C. Ellis, who was painfully burned. Two firemen also suffered severe injuries. The walls of the building were not damaged to any great extent, but the roof was almost completely destroyed.

THE RUBBER CLUB SENDS OUT TARIFF INFORMATION.

Within two or three days after President Wilson had signed his name to the new Underwood Tariff Law, Mr. Vorhis, secretary of the Rubber Club of America, mailed a circular to the firm members of the club giving in condensed and convenient form the various provisions of that law relating to the manufacture of rubber and gutta percha. He managed to get all this information into four pages, and the circular will undoubtedly be retained by manufacturers for convenient reference. This circular was printed primarily for the firm members of the club, but anyone in the trade who will apply to Mr. Vorhis can get a copy—as long as the edition holds out.

THE GORDON RUBBER CO.

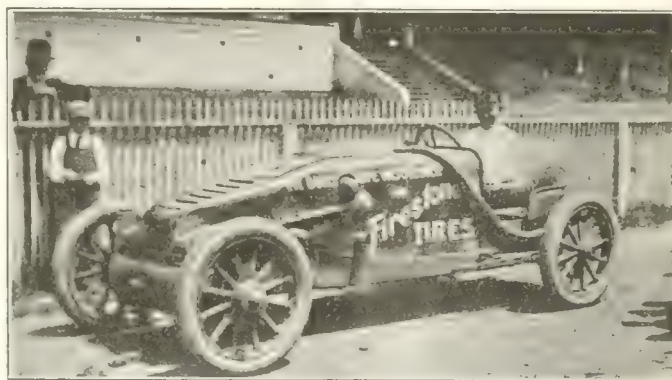
In our October issue mention was made of additions to the plant of the Gordon Rubber Co., at Beach City, Ohio, the size of these buildings being given as 40 x 50 and 40 x 200 feet respectively. This was an error, these new factory buildings having been added to the company's plant at Canton, Ohio, and being respectively 40 x 165 and 40 x 200 feet in size. These buildings—which are to be used for the manufacture of druggists' sundries and inner tire tubes—have been completed and equipped with all the latest machinery, and manufacture in the new plant begun. The additional space and equipment will enable the company to more than double its output.

THE KLEINERT COMPANY NOT TO MOVE.

The report in circulation regarding the intention of the I. B. Kleinert Rubber Co. to remove its plant to a new location has been denied by that company, H. A. Guinzburg, the treasurer, stating: "The publication was a mistake. We have no intention of removing our plant." This company manufactures a line of dress shields, rubber sheeting, etc., with works at College Point, Long Island, and office and salesrooms at 721 to 727 Broadway, New York.

OLDFIELD WINS WITH FIRESTONE TIRES.

Detroit was the scene of the latest triumph of Barney Oldfield, one of the most popular of present day automobile racers. In the competition which took place in that city on September 21, he did a mile in 48.8 seconds. Incidentally,



BARNEY OLDFIELD IN THE WINNING CAR.

it might be mentioned that in this race he used Firestone tires, the same which he had used a short time before in a race at Bakersfield, California, where on a dirt road he covered a mile in 46.4 seconds, the lowest time yet made. We reproduce herewith a recent photograph of Mr. Oldfield in his racing car—a 300 horse-power Christy front drive. He began his racing career in 1902, and in the spring of the following year, at Indianapolis, he first became famous as a driver, doing a mile over a dirt track in a few seconds less than a minute and making a world's record.

PERSONAL MENTION.

Fred. E. Dayton has been engaged by the Ajax-Grieb Rubber Co., of Trenton, New Jersey, to manage its department devoted to advertising Ajax tires and to assist in the management of the sales department, which is in charge of J. C. Matlick.

T. H. McGiehan has been elected to the vice-presidency of the Motz Tire & Rubber Co., of Akron, of which concern he has been general manager for the past year.

Herbert P. Ziegler, former manager of the Goodyear Tire & Rubber Co.'s sales department at Milwaukee, has been transferred to a similar position with the Chicago branch. W. W. Calahan has been promoted to the management of this company's Milwaukee branch from a position in the sales department which he has occupied for the past six years. T. A. Butler has become manager of the company's Philadelphia branch. He was previously connected with the Diamond Rubber Co., for several years, both in New York and Boston.

H. D. Benner has been appointed manager of the Federal Rubber Manufacturing Co.'s branch in New York, coming to this position from a similar connection with the company at Philadelphia.

E. S. Kelly, lately employed at the Chicago branch of the B. F. Goodrich Co., has accepted a position as tire expert with the Firestone Tire & Rubber Co., at Akron, Ohio.

Mr. C. A. Swinehart, the new general manager of the Vulcan Rubber Co., of Erie, Pennsylvania, formerly acted as manager of sales for the Swinehart Tire & Rubber Co. of Akron.

The Meeley Rubber Co., Inc., of Philadelphia, has placed William Fait, Jr., in charge of its selling branch at Washington, D. C., and Edwin T. Howard in a similar position in its solid tire department.

A department to be devoted to its new "E. C. McGraw" Truck Tire has been established by The McGraw Tire & Rubber Co. of East Palestine, Ohio. This department will be managed by Mr. A. Hanschild, former manager of the Polack Tire & Rubber Co., who brings to the office a fund of practical knowledge gained through his connection with the Polack company, both in Europe and in this country.

Mr. William A. DeLong returned to New York on October 13 after a five weeks' stay in London, where he was engaged in some business matters concerning the New York Commercial Co., for which he has acted as trustee during the past eight months. Before his retirement from active business about ten years ago, Mr. DeLong was one of the best known men in the rubber trade.

Mr. George Mills, the popular salesman at Bailey's Rubber Store, 22 Boylston street, was pleasantly surprised on October 17 when he was presented by Mr. C. J. Bailey with a gold watch and scarf pin in recognition of twenty-one years of faithful service.

James Lawton, son of L. C. Lawton, president of the Chicago Rubber Co., sailed about the middle of October for Dutch Guiana, where he will be connected with The Dutch Guiana Culture Co. This company has planted, altogether, 70,000 rubber trees, and 1,000 of these are old enough to be tapped next year. Mr. Lawton has been on the plantation before and is very enthusiastic over the company's prospects.

W. H. Hildreth, a director of A. H. Alden & Co., Ltd., of London, and Mr. Hambling, general manager of the London & Southwestern Bank, of London, arrived in New York City on the *Lusitania* on October 31. They will be in New York for some time on business connected with the liquidation of the New York Commercial Co.

MR. C. O. BRANDES.

Mr. C. O. Brandes, whose portrait appears below, has been engaged by the Firestone Tire & Rubber Co. of Akron, Ohio, as manager of its export sales and shipping departments—a position



MR. C. O. BRANDES.

created by the rapid growth of this branch of the company's business. Mr. Brandes possesses a wide knowledge of both foreign and domestic trade conditions, which especially fits him for this important and difficult position, having had years of experience in European markets previous to his connection with the rubber trade of this country. He was born at Hamburg, Germany, but has been in America for the past eight years.

THE TWO NEW DIRECTORS OF THE UNITED STATES RUBBER CO.

At a meeting of the Board of Directors of the United States Rubber Co., held October 3, 1913, Nicholas F. Brady and James C. Brady, sons of Anthony N. Brady, were elected directors of the company, to fill the vacancies caused by the death of Frederick M. Shepard and Anthony N. Brady.

Reports made at the meeting show the business of the company for eight months of 1913 to be somewhat in excess of that for the corresponding months of 1912, and notwithstanding that there is a recent falling off in volume of sales, the indications are that for the entire year the sales will reach, if not exceed, the volume of business done in 1912. The above statement applies to the entire business of the company. The profits of the year so far compare favorably with those of 1912.

MR. FRANK EVANS.

Mr. Frank Evans, acting director of the Department of Agriculture of the Central Province, Southern Nigeria, recently visited New York on his way south. He expects to make a brief stop in Florida and then go on to Panama and Cuba.

AN AUSTRALIAN RUBBER MAN VISITS AMERICA.

Mr. E. E. Glass, of the rubber firm of Barnet Glass & Co., of Melbourne, Australia, is visiting America for the first time. He is very much interested in certain lines of rubber manufacture and has devoted considerable time to looking over some of the big American factories. He sails for home from Vancouver late in November.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson

NEW CORPORATIONS.

Amalgamated Rubber Co., Inc., October 17, 1913; under the laws of New York; authorized capital, \$300,000. Incorporators: Robert Naumann, 70 Randall avenue, Corona, New York; Charles B. Alling, Montclair, New Jersey, and William Naumann, 70 Randall avenue, Corona, New York. Location of principal office, New York. To manufacture and deal in rubber goods.

American-Chinese Republic Rubber Co., September 16, 1913; under the laws of Illinois; authorized capital, \$25,000. Incorporators: William M. Staley, H. W. Griswold and Charles G. Davies. Location of principal office, Chicago, Illinois. To manufacture and deal in rubber goods.

American-Malaya Trading Co., October 8, 1913; under the laws of Delaware; authorized capital, \$100,000. Incorporators: William H. Jacobs, 68 Howard street; Kate Buerck, 263 Chadwick avenue, and George C. Ralph, 24 Nelson Place—all of Newark, New Jersey. To import and export, buy and sell and trade in cocoa beans, vanilla beans, coconuts, rubber, and other similar products.

Columb Tyres Import Co., Inc., September 8, 1913; under the laws of New York; authorized capital, \$50,000. Incorporators: H. Ray Paige, A. C. Kahler—both of 1789 Broadway, New York, and Frank H. Twyeffort, 286 Saint John's Place, Brooklyn, New York. Location of principal office, 1891 Broadway, New York. To sell "Prowodnik" automobile tires, tubes and other rubber products of parent company which is The Russian French India Rubber, Gutta-percha & Telegraph Works, of Riga, Russia.

Deatherage Airless Tire Co., September 4, 1913; under the laws of Kentucky; authorized capital, \$14,000. Incorporators: J. S. Collins, S. A. Deatherage and George B. Phelps—all of Richmond, Kentucky. To acquire, manufacture, buy, sell and deal in patented airless tires for automobiles, etc.

Flexible Rim Tire Co., Inc., October 20, 1913; under the laws of New York; authorized capital, \$25,000. Incorporators: C. Elmer Clapp, 181 West 75th street, New York; Ernest G. Ofeldt, Nyack, New York, and Alpheus H. Faveur, 45 Cedar street, New York. Location of principal office, New York. To manufacture patented tires for motor vehicles, etc.

Marathon Tire Sales Co., Inc., October 22, 1913; under the laws of New York; authorized capital, \$1,000. Incorporators: Owen Moynihan Bergenfield, New Jersey; Joseph Brewster, 225 East Seventeenth street, New York, and Richard M. Farries, Scarsdale, New York. Location of principal office, New York. To carry on general tire business.

Mecca Tire Co., September 25, 1913; under the laws of Delaware; authorized capital, \$100,000. Incorporators: William R. L. Fullerton, 900 South 47th street; Charles H. Bucklet, 34 South 40th street, and L. T. Layton, 742 Real Estate Trust building—all of Philadelphia, Pennsylvania. To manufacture and deal in automobile tires, tubes, etc.

Miller's Inner Tire Core Co., October 9, 1913; under the laws of Delaware; authorized capital, \$250,000. Incorporators: J. M. Miller, H. C. C. Stiles, and George B. Rose—all of Washington, D. C. To acquire patents covering the Miller Inner Tire Core.

Ohlsson Spring Tire Co., Inc., August 16, 1913; under the laws of New York; authorized capital, \$30,000. Incorporators: Charles J. Ohlsson, 170 Park Place, Joseph Maddocks, 156 Saint Marks Place, and Peter J. Butterly, 46 Berkeley Place—all of Brooklyn, New York. Location of principal office, Brooklyn, New York. To manufacture patent spring tire.

Quality Rubber & Auto-Supply Co., September 27, 1913, under the laws of Delaware; authorized capital \$25,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin, and S. C. Seymour—both of Camden, New Jersey. To deal in automobile tires, etc.

Safety Rubber Tire Co., Inc., October 2, 1913; under the laws of New York; authorized capital, \$500. Incorporators: Frank Kronenberg, Minnie E. Kronenberg, and William Kronenberg—all of 497 Dean street, Brooklyn, New York. Location of principal office, Brooklyn, New York. To manufacture and deal in all kinds of rubber tires.

Self-Compressed Indestructible Automobile Tire Co., September 15, 1913; under the laws of South Dakota; authorized capital, \$100,000. Incorporators: J. W. Kennedy, W. H. Farnsworth and Guy Barnes—all of Sioux City, Iowa. Location of principal office, Sioux City, Iowa. To manufacture and market an automobile tire which is designed to replace pneumatic rubber tires.

The Sherwood Crippen Rubber Co., September 30, 1913; under the laws of Ohio; authorized capital, \$20,000. Incorporators: John C. Sherwood, Robert C. Crippen and Charles L. Crippen. Company's initial incorporation was September 28, 1913, as The J. C. Sherwood Rubber Co.

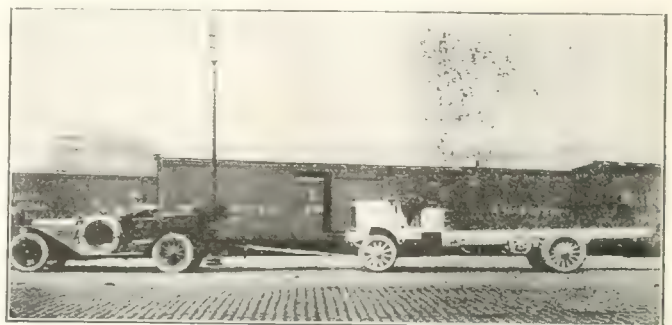
Spring Cushion Tire Co., September 30, 1913; under the laws of Delaware; authorized capital, \$300,000. Incorporators: W. I. N. Lofland, John S. Collins, Jr., and W. F. P. Lofland—all of Dover, Delaware. To manufacture spring cushion tires for automobiles, motor trucks, etc.

United States Pneumatic Rim & Tire Co., September 13, 1913; under the laws of Delaware; authorized capital, \$1,000,000. Incorporators: Charles B. Bishop, Clarence J. Jacobs, and Harry W. Davis—all of Wilmington, Delaware. To purchase Chipley patents from the Pneumatic Rim & Tire Co.

Voorhees Rubber Manufacturing Co. of Pittsburgh, September 18, 1913; under the laws of Pennsylvania; authorized capital, \$10,000. Incorporators: Frank W. Succop, Cheswick; James Milholland, Pittsburgh, and A. H. McNamee, Carnegie—all of Pennsylvania. Location of principal office, Pittsburgh, Pennsylvania. To deal in rubber, leather and canvas goods, etc.

THE TUBE THAT TOWED THE 4-TON TRUCK.

Here is a photograph of Mr. J. B. Cothran, New York City district manager of The Fisk Rubber Co., of New York, showing him in his Lozier car towing a Packard truck



TESTING A FISK TUBE.

weighing 8,600 pounds, the tow line being a 5 x 37 Fisk Pure Gum tube. This is a convincing demonstration of the strength and durability of the tube.

TRADE NEWS NOTES.

The Bristol Co., Waterbury, Connecticut, has taken over the business of the Goodwin Hollow Set Screw Co., and has made arrangements for the exclusive manufacture of the Goodwin Patent Hollow Safety Set Screws with the dove-tailed slots. Better facilities for manufacturing these set screws will be provided and shipments are already being made from the main factory of the Bristol company.

The Anglo American Rubber Corporation has changed its location from 367 Hamilton avenue, Brooklyn, to Bush Terminal building No. 19 in the same city.

The Panther Rubber Manufacturing Co., of Stoughton, Massachusetts, has purchased a factory in Sherbrook, Quebec, which it is equipping with machinery for the manufacture of rubber heels, soles and soling.

The Voorhees Rubber Manufacturing Co., of Pittsburgh, Pennsylvania, has been incorporated to distribute in that city the product of the Voorhees Rubber Manufacturing Co., of Jersey City.

The Aetna Rubber Co., of Cleveland, Ohio, large manufacturers of rubber gloves of all descriptions and also of molded goods, have just erected a new factory 50 x 120 feet, two stories high.

The Pan American States Association held a meeting of special interest on October 3 in its capacious quarters corner Thirty-second street and Sixth avenue, New York. Plans for the new home of the association were on exhibition.

An involuntary petition in bankruptcy has been filed against the Standard Vulcanizing & Tire Co., of Nashville, Tennessee by its creditors, who claim insolvency and admission of inability to pay debts.

A drawback allowance was granted on October 6 by the Treasury Department on the exportation of waterproof cloaks and coats manufactured by the Cravenette Co., of Hoboken, New Jersey, from imported woolen cloaks and coats for the account of E. Connor & Co., New York City.

THEY SPECIALIZE AT THE STODDARD WORKS.

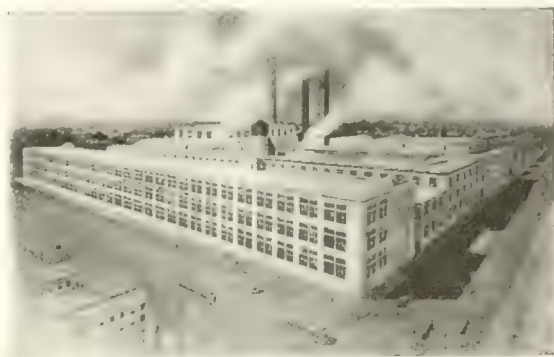
The C. H. Stoddard Rubber Tire Works, Worcester, Massachusetts, believe in specializing. They make tires only for the Ford cars and in but two sizes, viz.: 30 x 3 and 30 x 3½. They contend that by limiting themselves to these two sizes of one tire they can afford to make them 25 per cent. over-size, with extra fabric, and still sell them at a low price, not being put to the great expense of the manufacturers who make a great many different sizes—in some cases 44—and a number of different types of each size. The Stoddard company occupies a four-story factory building and uses the one-cure wrapped tread apparatus.

THE COLONEL WAS RIGHT.

Colonel Samuel Reber, head of the Government Signal Corps at Washington and in charge of the Aeronautical Department, and one of the best posted men on aeronautics in the United States, was very much interested in the recent balloon race from Paris in which the two Americans—Messrs. Upson and Preston—took part in the balloon "Goodyear." When all trace of this balloon was lost and some people were afraid it had blown out to sea the Colonel, who is familiar with the air currents in that part of the world, prophesied that they would soon meet return currents that would carry them back to the land and that they would drop somewhere in Northern England. He also prophesied that they would win the race. Both prophecies came true.

THE DAVOL PLANT OF TODAY.

WITH the completion of the addition to their already extensive plant at Providence, Rhode Island, and the installing of new calenders, mixers and special machines, together with a complete power plant, the Davol Rubber Co. felicitate themselves upon being the largest and best equipped company in their line in the world. This line, be it noted, is not confined to druggists' sundries, but is described by the manufacturers as "fine rubber goods." This broadened field embraces the myriad articles shown



DAVOL RUBBER CO. PLANT.

in the surgeons' and dental depots and the stationery trade, and an almost endless list of special articles used in every art, craft and profession.

With so diversified a line, many special machines, the production of the company's own experts, have been found necessary; and a notable adjunct to the factory is the group of machine shops where special tools, machines, molds and dies are designed and made with an attention to detail and a finish that leaves nothing to be desired.

In its early beginnings in 1874, many articles in the Davol line were imported into this country, some extensively. Today the Davol company have a large export business in these lines in Europe, and indeed send their goods everywhere in the Orient and Occident.

One of the pioneers in the business, the company was established in 1874 and incorporated in 1882 as the Davol Manufacturing Co. Three years later, to more fully designate the character of its goods, the name was changed to The Davol Rubber Co.

The present plant is not only efficient mechanically, but its organization of workers, some nine hundred, in all, is a skilled force that works together with the perfection of a machine.

As showing their knowledge of the difficult markets of the world, the company, for instance, have specialized in rubber goods suited to the Tropics, and their business in South America, Africa, the Middle and Far East, and in Oceanica, is very large.

To quote from a remark of one of their officers, "Success has not been an accident but the culmination of years of constant effort of many skilled minds concentrated on one idea, to produce the best in good, honest goods."

In 1914, the Davol company will round out forty years of continuous and conspicuous business success. It is certainly to be congratulated on this notable record.

An American consular officer in India reports that a resident of that country would like to secure catalogs from American manufacturers of spraying machines for use on coffee trees, to distribute among members of an association to which he belongs. He desires prices along with the catalogs, and any other particulars available, such as the length of time required to obtain such goods from the United States, etc. Report No. 11,862.

TRADE NEWS NOTES.

The Liberty Rubber Co., of Orange, New Jersey, has recently installed new equipment, the business having been purchased by practical rubber manufacturers. Its products include, in addition to all the small rubber parts used in connection with an automobile, "Men-Do" for tires and tubes, "Treadmend," blow-out patches, and everything pertaining to the repair of tires.

The plant of the Western American Rubber Co., located on North avenue, Los Angeles, California, was recently damaged by fire to the extent of \$25,000.

At the annual meeting of stockholders of the General Bakelite Co., held at the company's office at 100 William street, New York, on October 1, the following officers were elected for the ensuing year: Dr. L. H. Baekeland, president; Jacob Hasslacher, first vice-president and treasurer; Dr. Hans Foersterling, second vice-president and superintendent, and Paul Mausloff, secretary.

The firm of Ernest Jacoby & Co., Inc., of 79 Milk street, Boston, with factories at South Braintree, manufacturing high grade rubber substitutes, is now being represented and its goods sold in Akron, Ohio, and the surrounding territory by Gove & French, Inc. This company has lately put on the market a belt dressing known as "Stixtite," said to possess unusual preservative and gripping qualities.

The Cornwall Rubber Co., a new reclaiming concern, under the management of W. C. Coleman, of Boston, has acquired the plant formerly occupied by The Estes Manufacturing Co. at Cornwall, Connecticut.

A new rubber manufacturing concern has recently been organized in Massachusetts under the name of Philips, Anderson & Rich, to make a line of molded specialties. South Boston is named as the probable location of its factory.

The top floor of the building at 531 to 537 Broadway, New York, has been leased by the Cross & Brown Co., to the Goodyear Tire & Rubber Co.

The Chester Rubber Tire & Tube Co., of Chester, Ohio, has contracted for machinery to be installed in its plant at Ninth street and Carolina avenue, H. Neely of Akron, being the engineer in charge of the installation. It is said that the new plant will be running by December 15, that it will employ about 100 workmen at the start, and that, while the operation of the factory will be superintended by an out-of-town man, local stockholders will be in charge.

Work has been started on the new building at Atlanta, Georgia, of the Fisk Rubber Co., of Chicopee Falls, Massachusetts. This building will be three stories high and will cost approximately \$60,000.

The Nichols Tire & Rubber Co., notice of whose incorporation appeared in the October number, is to establish headquarters at 222 West 52nd street, New York City, from which it will distribute in the Eastern territory—which is considered as including Connecticut, New York City, Long Island and part of New Jersey—the product of the Knight Tire & Rubber Co., of Akron, Ohio. The president of this new concern is James C. Nichols, who is also president of the General Automobile Supply Co., and the secretary is W. B. Hughes.

On Monday, November 3, a meeting of the creditors of the New York Commercial Co. will consider the payment of an initial dividend.

At a creditors' meeting in Boston, on October 18, Geo. A. Alden & Co. offered a payment of 10 per cent. in composition. The offer was accepted by the creditors.

A CONVEYOR BELT 700 FEET LONG.

Here is a reproduction of a photograph taken of a conveyor belt recently made by the Goodyear Tire & Rubber Co. of Akron, the belt being 700 feet long, 2 feet wide and weighing 5,140 pounds. The belt is to be used for conveying hot



A 5,140-POUND GOODYEAR BELT.

cement. It will be noticed by the picture that, while the workmen standing near the rolled up belt are pretty stalwart fellows of good altitude, the roll of belting towers considerably above them.

"THE DOMINION."

"The Dominion" is a semi-monthly publication of 16 pages and cover, tastefully printed, published by the Canadian Consolidated Rubber Co., Ltd., Montreal, for distribution among the companies and branches connected with that corporation. The October 1 number contains much interesting matter, among which might be particularly mentioned a recent interview given by the company's manager, Mr. A. D. Thornton, to the "Montreal Star," regarding the expectation on the part of the retail dealer of immediate lower prices for manufactured goods every time the price of crude rubber declines. Mr. Thornton points to the fact that about six months elapse between the time rubber is bought and the distribution of the goods in which it is used; that the goods now being offered the retailer were made of rubber bought at a considerably higher price than now prevails in the crude rubber market. He continues: "Then again all other commodities are higher than before. Cotton is very high; chemicals are all heavily in demand. Consequently prices are continually on the up-grade. Labor—well, you all know what labor is; there is no end to the increase in wages demanded by labor. We are large users of gasoline. A short time ago it was 16 cents per gallon; today we are paying 24½ cents. So you see, taking in the above considerations, it would not appear wise to even talk about lower prices at present."

Incidentally, "The Dominion" reprints an editorial which appeared in the August issue of THE INDIA RUBBER WORLD entitled "Guaranteeing the Unguaranteeable," which called attention to the great burden imposed upon the manufacturer of tires in demanding from him a guarantee when he could by no possibility tell to what sort of abuse the tire was going to be subjected.

SEND for Index (free) to Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE FOXBORO TIRE PLANT MAY BE SOLD.

There is more than a possibility that the receivers of the Walpole Tire & Rubber Co. will dispose of the company's Foxboro works, which are equipped for the manufacture of tires and inner tubes. There are two buildings—one 210 x 60 feet, three stories and basement, and one 150 x 65 feet, one story and a half. The equipment is sufficient to produce 500 tires per day. Here is an opportunity worthy of consideration by any one desiring to start tire manufacture without any delay.

RUBBER COMPANY HAS A DISASTROUS FIRE.

The Milwaukee, Wisconsin, branch of The Goodyear Rubber Co. had a most disastrous fire on October 26. Owing to an explosion which sent the walls crashing down upon fifty firemen, a number of them were caught beyond the possibility of escape. The bodies of seven were taken from the ruins after the fire was extinguished and twenty-four others were injured. The money damage to the building and stock is placed at over \$500,000.

THE FATAL RESULT OF A SYNTHETIC EXPERIMENT.

It would undoubtedly be a revelation even to those in the trade most familiar with the subject to know how many people are busily engaged in the quest of synthetic rubber. It is safe to say that in the United States, England and on the Continent, there are thousands of experimenters devoting themselves to this most attractive problem. The work in one synthetic laboratory in New Jersey was recently attended by most disastrous results. Dr. Louis Gottschalk, a German chemist, and his wife—herself the holder of several scientific degrees—erected, a few years ago, a laboratory in the rear of their residence in Sewaren, New Jersey, where they were devoting their energies to chemical experiments for the purpose of discovering the much sought-for synthetic rubber. They had progressed so far in their work that a company had been formed—known as The Alembic Process Co.—to market their product, but they were still busy in the attempt to perfect their process. They had five steel cylinders, about 4 feet long and 6 inches in diameter, filled with certain chemical ingredients, the combining of which they were watching with intense interest. So absorbed were they in this work that they continued their experiments late into the night and began early in the morning. On the morning on which the accident occurred they were both busy in their laboratory when they were called to the house for breakfast. The doctor responded, but his wife lingered a moment to make further observations. The doctor had scarcely reached the house before there was a tremendous explosion, which wrecked the laboratory and resulted in the instantaneous death of Mrs. Gottschalk. One of the five cylinders had exploded, the other four, however, remaining unharmed. The doctor has not revealed the nature of the compound contained in the cylinder.

A NEW TIRE COMPANY IN AKRON

The Mohawk Rubber Co. has been organized at Akron, Ohio, and has bought The Stein Double Cushion Tire Co. plant and machinery. The new company is organized with a capitalization of \$350,000, \$250,000 common stock, and \$100,000 7 per cent. cumulative preferred stock. The plant is located in East Akron, and has a present capacity of between 100 and 150 tires per day.

The president is R. M. Pillmore; the vice-president is C. D. Paxson, of Cleveland; the superintendent of the plant is S. S. Miller, formerly with The Kelly Springfield Tire Co.; the treasurer is C. W. McLaughlin, formerly assistant cashier of The Diamond Rubber Co. M. E. Mason, secretary and sales manager, was connected with the sales department of Morgan & Wright for many years. The directors are: R. M. Pillmore, Akron; C. D. Paxson, Cleveland; J. K. Williams, F. J. Mishler, S. S. Miller, C. W. McLaughlin, and M. E. Mason—all of Akron.

THE B. F. GOODRICH CO. PROTECTS ITS DEALERS.

On October 28, last, The B. F. Goodrich Co., of Akron, sent out the following circular to dealers handling its tires: "In order that we may reassure those dealers, who are handling our product, we desire to advise that on all automobile casings and tubes of our brands purchased by you on and after the first day of November, 1913, we will protect you against shrinkage in value caused by a reduction in price made by ourselves, provided that, at the time any reduction is made, you still have the goods in your hands. Should a reduction occur, a Credit Memorandum for the amount of the difference in price caused thereby will be issued to your account."

FIRE HOSE IN KANSAS CITY.

A recent report on the Kansas City fire department contains the following paragraph regarding the amount and character of hose used in that department: "All of the 2½-inch hose is cotton, rubber-lined, of well-known brands, bought under the usual guarantees and tested yearly at about 200 pounds pressure. New hose is distributed among the companies near the center of the city and their hose given to the outlying companies where work is lighter. The majority of the wagons carry only 750 feet of hose, but five carry 900 feet and one carries 1,000 feet. An extra shift is kept in reserve at each station. Hose is changed on wagons only when wet or dirty."

A FIRE ENGINE PUT TO ODD SERVICE.

Ordinarily the use of a fire engine is to preserve property, but an instance occurred recently in Detroit where it was used to destroy a piece of property, the destruction of which was quite desirable. There was an old brick house, 75 years old, on one of the streets, in such a dilapidated condition that it was not only dangerous to passers by but really hazardous to tear down in the usual way. The fire department was appealed to and a fire engine was assigned to the duty of demolishing the building, which it did in less than eight minutes, with a powerful, well-directed condensed stream.

SCHOFIELD'S LIQUID TIRE TONIC.

While there are many "puncture proof" tires on the market, and many "fillers" which are supposed to make punctures impossible, accidents of this nature continue to occur, and the tire user is still on the watch for something that will reduce to the minimum inconveniences arising therefrom. That an article which will accomplish this end has been produced in Schofield's Liquid Tire Tonic, is the claim of its manufacturers, The Liquid Tire Tonic Co., of Kansas City, Missouri. The company distinguishes very sharply between "filler" and "tonic." The action of this latter preparation—a small quantity of which is injected into the inner tube, occupying only about 6 per cent. of the space in the inflated tube, where it remains, unimpaired by either heat or cold—is described, in the event of a puncture, as follows: "The fibrous part of the compound, which forms a thick layer along the inside wall of the tube, is forced into the hole by the pressure of air. At the same time the fluid with which the fibre is mixed is squeezed from it in much the same manner as water is expelled from a sponge when pressed by the fingers. The plug of fibre expands the moment it enters the hole and instantly an elastic cork is formed, which absolutely prevents the slightest outlet of air."

Among the claims that the company makes for it are: That one treatment will last the entire life of a tube, prolonging it at least 40 per cent.; that it will not injure the tire or detract from its resiliency; and that it not only mends the leak in the tube, instantly and permanently, but also heals the wound in the casing.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude and Compounding Ingredients."

Interesting Letters From Our Readers.

THE ADVANTAGES OF BALATA BELTING.

EDITOR, THE INDIA RUBBER WORLD:

Dear Sir: In the issue of October 1, this year, your magazine had an article with the heading as above, taken from "The Goodyear—A Family Newspaper," published by the Goodyear Tire & Rubber Co. of Akron, Ohio, in which Mr. R. D. Burr, manager of the mechanical goods department of the company's Chicago branch, explains his experience in the advantages of balata belting.

Having had twenty years' experience as manufacturer of leather and balata belting, I take the liberty to further point out the advantages of balata belt over leather and rubber belting.

Mr. Burr points out five conditions to be considered in the purchase of belting. He is right in saying that balata belt is little known and used in this country, but does not give his reason for saying so. Its little use in this country is due to the high tariff on it of 35 per cent.* ad valorem and about 10 per cent. for transportation. It has only been made in the United States during the last few years. Most users of belting have never seen nor heard of balata belting and of its many advantages over other belting. Owing to the high tensile strength of balata belt, which is practically double that of leather and rubber belting, and its high co-efficient of friction between it and the pulley face, a thinner balata belt can be used to transmit the same horse power that thicker belts transmit, thus reducing the cost of belting and giving less shock to pulleys and bearings in that we have a less thickness of belt to bend when it passes over the pulley.

I do not agree with Mr. Burr that balata belt is especially adopted to certain few conditions of power transmissions. Experience all over Europe has proved that balata can be used advantageously to transmit power under practically all conditions. Speaking about heat, it can be used wherever man can work.

Let me cite a specific case of the less cost of balata belt. A four-ply balata belt and a single leather belt cost the same per foot of length, but a four-ply balata belt has twice the strength that a single leather belt or a four-ply rubber belt has and will consequently transmit twice the power that a single leather belt will, so the balata belt will cost just half as much. I know this to be true of the comparative tensile strengths of the three belts, as I have made comparative tests of the same.

The balata belt increases in strength with age. Rubber belting decreases with age and oxidizes. Most all dealers as well as consumers of rubber belting keep their belts in storage.

For conveying or elevating, balata belting is especially adapted. It will stand all kinds of weather, is tough, does not rot, shrink, stretch, nor become affected by any atmospheric conditions. It can be used thinner, owing to its great strength, and in places where no roof is needed. It can carry rocks, sand, coal, ore or any other material, wet or dry.

Mr. Burr speaks of a machine running at five to seven thousand feet per minute. He must mean that the belt runs at that speed.

Mr. Burr recommends the balata belt for high speeds, on account of the greater strength, and on small pulleys. Now balata belting can be used on slow speeds as well, because a slow-speed belt has to have a greater initial tension and consequently a greater pull than high-speed belts.

What has happened in Europe and other countries I am sure will happen in the United States, and that is the balata belt will increase in demand and will replace rubber and leather belts, provided the balata belt manufacturers in the United States keep up the quality.

ANTHON BERG.

Akron, Ohio, October 13, 1913.

Editor THE INDIA RUBBER WORLD:

Dear Sir:—My attention has lately been called to some remarks in a recent issue of THE INDIA RUBBER WORLD with reference to the School of Rubber at the Northern Polytechnic Institute (London). Those remarks do not, I am afraid, do justice to either the school or its tutor, and as I recently took the day course of study there (whilst on vacation from the Orient) I know perfectly well just how useful such a course can be under the able tuition of Mr. Kaye; especially to those such as myself, who desire a further insight into the higher chemistry of rubber.

Students at this school come from various parts of the world, and are drawn from all branches of the industry, including chemists, superintendents of departments, factory men, salesmen (who desire to know something about the goods they carry), plantation assistants, etc.; and each one receives individual attention and may take a course suitable to his own requirements. The two laboratories are well equipped with an up-to-date reference library, testing machines, rolls, compounds, latices, etc., and the institute contains a restaurant, clubs, and all the usual accessories of a polytechnic.

Of course, as you say, the correct place to learn the industry is in the factory, but then there are many things one cannot learn, or sometimes one is prevented from learning, in a factory. I enclose syllabus which gives further information. Hoping I have not trespassed too much on the space of your valuable journal, I remain,

Yours faithfully,

(Signed) STAFFORD H. PRATT,

Chemist to the Star Rubber Co.

Akron, Ohio, September 24, 1913.

AS TO OPPORTUNITIES IN CENTRAL AMERICA.

In a recent consular report Commercial Agent Garrard Harris is quoted as stating, in reply to an oft repeated query as to the opportunities in Central America and Panama, especially in a business way, for a young man of practically no capital, that many young men of the United States have been misled by the optimistic views expressed in the discussion in the daily papers as to the future of these republics. He goes on to say that "there are no opportunities in any of the Central American Republics for a man, either young or old, who lacks capital. To go there without ample resources usually means an ultimate call on the folks back home for help to get away, unless, of course, the person intends to take up a tract of land and farm it. In this event he had better bring his labor with him, for lack of labor is what prevents the more rapid development of the entire region from Belize to Puerto Bello. While, as a rule, land may be had cheaply in Central America, except on the Canal Zone, and settlers' effects may be brought in free of duty, the problem of clearing and putting the land in cultivation is a serious one, and calls for considerable money. Moreover, there must be a reserve to support the developer until his land produces something besides a weekly pay roll."

*Reduced to 15 per cent. in the new Underwood-Simmons Bill.

OBITUARY RECORD.

JAMES L. DAVIS.

JAMES L. DAVIS, secretary and manager of The Jenkins Rubber Co., of Elizabeth, New Jersey, died on October 6 at the Blackburn hotel, Summit, New Jersey. He was born April 18, 1843. He became manager of The Jenkins Rubber Co.—located at that time in Holyoke, Massachusetts—when it succeeded the Tuttle Rubber Works in 1894 and continued in that capacity to the time of his death. He was a veteran of the civil war, having served in company H, fourth regiment of Massachusetts Volunteers. In addition to his rubber interests he was a director in the Union County Savings Bank.

J. C. L. GRAVEL.

J. C. L. Gravel, who for a combined period of 16 years had been connected with the Canadian Consolidated Rubber Co., Ltd., and prior to its formation with the Canadian Rubber Co., died suddenly of pneumonia on September 21. He was sick only four days, up to that time having been busy with the details of his work in the company's sales offices in Montreal. He was a young man of pleasing personality and exceptional industry, and was highly esteemed by the officers of the company and by his associates.

ADDISON F. ROBERTS.

Addison F. Roberts, connected with the Quaker City Rubber Co., died on October 25 at his home, 555 West 160th street, New York. Mr. Roberts was 50 years of age and was identified with the rubber trade. For many years he was connected with the Home Rubber Co. of Trenton, New Jersey, and was looked upon as one of the most brilliant salesmen of mechanical rubber goods in the United States. He was a man of attractive personality and was widely popular. He was a graduate of Princeton and a member of the Princeton Club of New York City.

RESOLUTIONS ON THE DEATH OF MR. BRADY.

At a meeting of the directors of the United States Rubber Co., held October 3, President S. P. Colt called attention to the loss sustained by the Board since its last meeting in the death of Mr. Anthony Brady, and offered the following resolutions which were unanimously adopted:

RESOLVED: That the members of this Board were greatly shocked and overcome at the sudden death of Mr. Anthony Nicholas Brady, in London, on July 22, last.

RESOLVED: That it is with feelings of profound sorrow and regret that we meet together for the first time since Mr. Brady's death. As we now look upon his vacant chair, we fully realize the irreparable loss we have all sustained.

Mr. Brady was a man of rare and engaging personality, and we shall ever miss his kindly, genial presence with us. Though modest and retiring by nature, he was a tower of strength in our deliberations. Mr. Brady was a man of wide general knowledge, and a master of the special subjects in which he was most interested. His mind was characterized by a largeness and breadth of view, a power of comprehension and concentration, and a grasp of details, which enabled him to carry through successfully great industrial enterprises. These rare qualities he brought to bear upon the business of our company. From the very beginning of his connection with us he seemed to grasp by intuition the whole range of our business in all its departments, and this knowledge extended to many collateral and allied subjects.

Mr. Brady became a member of our Board in May, 1904. He has also been a member of the Executive Committee since November, 1904. He came upon the Board at our solicitation, and he has served the company with distinguished fidelity and use-

fulness. He was always prompt in his attendance at our meetings and apparently never in a hurry to leave. Notwithstanding his many other business interests he gave to this company full measure of his time and thought. He has been most helpful, suggestive and resourceful in our deliberations and most painstaking in his attention to the many duties and responsibilities which have fallen upon him. The rapidity with which his mind detected and analyzed the main points of any matter under consideration was most remarkable, and he always looked to results. As we know, he was not a man of many words. In what he said, however, he was direct, outspoken and frank. He scorned deceit and evasion. He never talked for effect. He was true and loyal at all times. We shall ever miss his untiring devotion to the best interests and welfare of this company, the wisdom of his counsel, his wide experience and sound judgment; and we shall ever remember him with esteem and affection. Above all we feel today the personal loss of a dear, steadfast and loyal friend and helper.

RESOLVED: That this Board tender to the family of Mr. Brady their sincere and heartfelt sympathy in their great sorrow, and this testimony of the regard and honor in which Mr. Brady was held by his fellow directors and the officers of the company.

THE EDITOR'S BOOK TABLE.

HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES, for Buyers and Sellers. New York, 1913. Samuel E. Hendricks Co. [Cloth, quarto, 1666 pages. Price ten dollars.]

LISTING the names and addresses of manufacturers of and dealers in everything in the shape of materials, machinery, tools, etc., employed in the architectural, mechanical, engineering, contracting, electrical, railroad, iron, steel, hardware, mining, mill, quarrying and kindred industries, the twenty-second annual edition of the above work has undergone, this year, an important change in its system of indexing. In place of referring the engineer to the page on which the article is classified, as in previous editions, the number given refers to the classification itself, in which, in alphabetical order, are the names of the firms engaged in the particular line of business. This will greatly simplify the work of reference and render easily available the 390,000 names and 55,000 classifications the Register contains, removing all difficulty in locating the manufacturers of any article. As a buyers' reference, for mailing purposes, with its details of information, including titles of identification, trade names, etc., the Register will prove invaluable. The classification of the advertising with the industry to which it relates, is another commendable feature, and with the excellent printing, greatly adds to its value.

REPORT OF THE CEYLON CHAMBER OF COMMERCE FOR THE Half Year Ended June 30, 1913. Colombo, Ceylon, 1913. The Colombo Apothecaries Co. [Paper, 8vo, 105 pages.]

PREPARED by a committee for presentation to the Chamber, the officers and members of which are recorded in a list prefacing the document, the report deals with the various questions considered by the chamber during the period covered, most of which relate directly to local affairs and business matters.

An exception must be made in regard to the subject, "India and Naval Defence," under which head the propriety of India making a contribution to the cost of the British Navy, is discussed at length, as is also the proposition to levy an export tax on tea, rubber, cacao and cardamoms shipped from Ceylon, the general opinion being in favor of a specific duty levied per hundred pounds.

Another subject that received considerable attention was the frequent occurrence of thefts of rubber, and the circular issued to members of the chamber calling their attention to the necessity for the exercise of care in the purchase of rubber in unusually small quantities; and at the instance of the sub-committee on rubber, a recommendation was adopted that no lot of

rubber of less than 100 pounds be catalogued for sale. A circular informing them of this action on the part of the rubber committee has been sent to all members of the exchange.

The report also contains statistical matter showing the financial status of the exchange.

NEW TRADE PUBLICATIONS.

RUBBER FROM FOREST TO FOOT.

THE great development of the rubber industry during the last decade, the notable boom that took place in rubber plantation shares three years ago, enriching many people in a few weeks and later impoverishing others in about the same length of time, and the fact that millions of people take a personal financial interest in tires, have brought about a general desire on the part of the public to know something about rubber, what it is, where it comes from and how it is manufactured. Students like to write essays on this subject, and school teachers like to get rubber literature so that they can answer questions.

To satisfy this general thirst for rubber knowledge, Mr. Palmer, the head of the advertising department of the United States Rubber Co., has prepared a very handsome little pamphlet of 30 pages entitled "Rubber from Forest to Foot," in which the whole rubber story is told—something of its history; how it is gathered in South America and on the plantation; what it looks like when it reaches the factory, and how it is then washed and dried, compounded and calendered, cut and assembled, varnished and vulcanized and made into rubber boots and shoes. This information is given in the form of a fireside conversation. A certain boy, John, much pleased with his rubber boots, asks his father what rubber is and where it comes from, and the father—evidently a widely read man with a retentive memory—promptly gives him the information as described above. The book is handsomely printed, liberally illustrated and has a most attractive colored cover showing a rubber scene in the Amazon jungle.

A CONSTANT REQUIREMENT.

Any one doubting the value of the rubber stamp as an aid in the routine of the office, needs only to try what it would mean to do without that indispensable adjunct to business. He (or as in many cases, she) will soon find out its value. To discourse on the merits of the article would thus be "tedious as a twice-told tale," but it is seldom that its uses are so graphically brought forward as in the new catalog of the J. P. Cooke Co., Omaha.

Prominent among the many opportunities of using rubber stamps illustrated by this booklet, are receipts and endorsements, the writing of which would necessitate loss of time. Another important feature of the catalog is the range of time stamps for various purposes, while the many occasions calling for the use of the name of a firm, without the necessity of a personal signature, are fully provided for. The possibility of getting up forms by means of rubber stamps is likewise shown by various examples. This is a catalog to be preserved for reference and frequent use as required. Its 64 pages fully demonstrate what the rubber stamp can do.

THE DURST MECHANICAL LINE.

Few lines present so much detail as those which go to make up a typical collection of rubber and metal specialties; hence the practical value of the illustrated catalog by which the Durst Manufacturing Co. presents its various grades of mechanical rubber goods and plumbing sundries—including tubing, plungers, washers, strainers, and other articles. It illustrates a full assortment of bathroom accessories, such as corrugated rubber matting, shampoo sprinklers, shower baths and curtains, beside mentioning faucets, fittings and gas irons.

The catalog contains 30 pages, each having many cuts, so that the reader has no difficulty in forming an idea of the company's capacity. Among other lines featured should be noted

rubber heels, now frequently distributed in conjunction with small metal goods.

As a special catalogue "Drummer No. 7" is to be highly commended, and should bring about an extensive trade in the articles represented. [The Durst Manufacturing Co., 88-90 Reade street, New York.]

A NEW WALES-GOODYEAR BEAR.

Many years ago the Wales-Goodyear Co., which manufactures footwear and has long been famous for its arctics and gaiters, adopted a representation of a polar bear as part of its trade mark; a wise idea, because there are a great many people who can't remember names while everybody can remember pictures, and thousands of Wales-Goodyear rubbers have been sold to people who simply said: "I want the rubbers with the bear."

A dozen years ago this company issued a tall cut-out showing a polar bear rampant, wearing arctics on all four feet and perpetrating a lively dance on a cake of polar ice. It attracted a great deal of attention and ran through several editions, but evidently the popular appetite for Wales-Goodyear bears has never been fully appeased, for the company has just issued another polar bear cut-out, the animal being distinct from the first one, as this fellow is walking up out of the water, erect and with a look of challenge on his face and holding in his front paws a large four-buckle gaiter. This cut-out stands about 16 inches high, is done in the necessary colors to reproduce a polar bear with a north pole background, and is bound to attract attention in any window where it is placed; and it will still further impress the general public with the fact that the Bear Brand of rubbers is made by the Wales-Goodyear Co.

L'AGRICULTURE PRATIQUE DES PAYS CHAUDS.

The new series of "L'Agriculture Pratique des Pays Chauds," a monthly review of tropical agriculture, will be published under the direction of Messrs. Edmond Perrier, member of the institute, director of the National Museum of Natural History, Paris; H. Lecomte, professor at the museum; M. Costantin, member of the institute, professor at the museum; D. Bois, assistant at the museum; H. Jumelle, professor of the faculty of sciences at Marseilles; M. Pillicure, member of the institute, of the station for vegetable pathology; M. Dubard, professor of the faculty of sciences at Clermont-Ferrand; Guillaume Capus, former director-general of agriculture and commerce, in Indo-China; Maurice de Vilmorin, member of the *Société Nationale d'Agriculture*, administrator of the Jardin Colonial, with M. Augustin Challamel as editor. The editorial offices of the publication have been removed to 17 rue Jacob, Paris. "L'Agriculture Pratique des Pays Chauds" is a handsome, profusely illustrated periodical, published monthly in France, and dealing with agricultural operations as carried on in tropical countries. The annual subscription is 20 francs (\$3.86) for all countries in the postal union.

In the third number of the "Boletim de la Superintendencia da Defesa da Borracha," the various sections of this official Rio publication are filled with useful and interesting matter affecting rubber. Special attention is given to the decrees lately issued with reference to that subject, while the group of statistical tables shows general as well as local results of a valuable character, both for immediate use and reference.

As the official organ of the Brazilian government the "Boletim" merits the attention of all connected with the rubber trade. Its statistical features are referred to in detail in another column.

An American consular officer in France reports that an agent in his district handling automobiles desires to get in touch with American automobile supply manufacturers. Catalogs, price lists, etc., are desired. Correspondence should be in French if possible. The report is No. 11,841.

New Rubber Goods in the Market.

BAILEY'S RUBBER NAIL BRUSH.

THE accompanying illustration shows the "Wizard" Rubber Nail Cleaner, an entirely new article just placed on the market, being one of the latest inventions of Mr. C. J. Bailey, of C. J. Bailey & Co., 22 Boylston street, Boston.



This rubber brush is absolutely sanitary and not only cleans the nails perfectly without irritation of the skin or cuticle, but is provided with a polishing device that permits of the use of polish on the surface of the nail, and also with an indent to form the crescent.

A CAR WASHER WITH A RUBBER CAP.

An English company is making a nozzle for washing autos and other carriages which is supplied, among other new features, with a rubber cap and rubber collar. The rubber collar

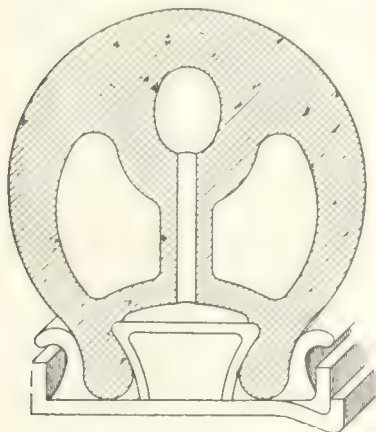


THE ADAMS CAR WASHER

is to protect the nozzle in case it falls on the ground, and the rubber cap is to prevent the scraping of varnish and paint on the auto or carriage. [Adams & Co., Tunbridge Wells, England.]

A ONE-ATMOSPHERE CUSHION TIRE

The accompanying diagram shows a cushion tire in which the air circulates at atmospheric pressure, the object of the design being to avoid the necessity of using an inner tube and to rely



wholly upon the resiliency of the material. The tire is a multiple cushion device made up in segments possessing a special interlocking feature, which holds them in alignment on the wheel rim. Inside, and continuous with the tread, is an arch formation, supported, through a column, by another arch forming the base. This base fits into the rim of the wheel in such a manner that the weight upon the tread of the tire secures the base tighter at the rim in all directions, and at the same time forms a series of air chambers or tubes which provide resiliency. Should any section of the tire be destroyed, it can be easily replaced in a few minutes by inserting one or more segments as required. Since the air in the chambers is at atmospheric pressure, it is evident that there can be no blow-outs and that punctures can have no effect. [Dr. A. M. Smith, Petersburg, Virginia.]

RUBBER STRIPS FOR SECURING WINDOW GLASS.

One of the newest uses to which rubber may be put, and in which it may, perhaps, be widely adopted during the next few years, is brought out in a recent patent. This patent relates to a method of fastening window glass by means of rubber strips instead of by the use of putty, as has been the custom for many



years. In the accompanying illustration *A* represents the sash of the window and *B* the glass, altho the claim does not limit the adaptation of the fastening to glass alone, but to any form of panel. At *C C* are shown cross sections of two of the vertical strips of rubber. It will be seen that the sash members are cut with inwardly beveled grooves to conform to the beveled edges of the rubber strips which hold the glass in place. When the glass is set in the sash and the retaining strips are forced into position, the parts fit tightly together, keeping out all moisture. One advantage of this method of fastening is that the glass can be removed at any time without the usual trouble and dirt which attend the use of putty. [United States Patent No. 1068407.]

A VERY CONVENIENT HOSE RACK.

Here is a compact and convenient rack for inside fire protection for factories or warehouses. It is made of half-oval steel, is light, looks well and keeps the hose out of the way



and yet within easy reach. It can be supported by a bracket against the wall, as shown in the illustration, or by clamps around a standpipe. [Elkhart Brass Manufacturing Co., Elkhart, Indiana.]

TO PROTECT GAS TUBING.

There are three excellent reasons why the motorist should wish to avoid the escape of acetylene gas from the tube that conveys it from the tank to the lights, viz.: the gas is expensive, the odor is exceedingly disagreeable, and there is always the element of danger from fire in the escape of this gas; and yet it is liable to escape in time if the means of communication between tank and light is an unprotected rubber tube—especially if this tube passes through any metal work where the constant vibration of the car is likely to wear it. Even apart from this possibility, rubber naturally deteriorates when exposed for a long time to the air—at least it is liable to harden and crack, so that it is better to have it protected. Tubing to cover exposed parts can be secured at any electrical supply house. Some manufacturers of cars are putting in tubing covered by braided linen, which makes an excellent protection.

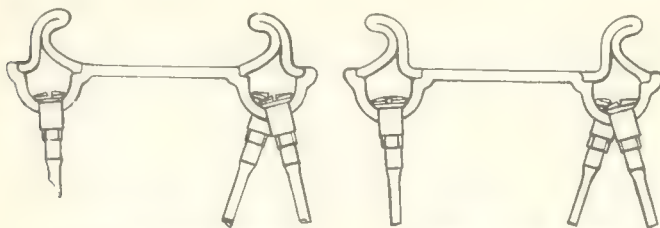
A RUBBER EAR MUFF.

Men who live in the city and ride to their offices in the morning and back at night on the elevated or in the subway are not likely to feel a pressing need for ear muffs, but in the country, and particularly in that part of the country where they enjoy low thermometers many times during the winter, the ear muff is certainly a desideratum. Ordinarily, this ornamental piece of wearing apparel is made of wool, but here comes a citizen of Connecticut who has

constructed an ear muff of rubber. It consists of a cup of hard rubber, with edges finished off in soft rubber and made to fit down over the ear in such a way that a suction will be formed—presumably for the purpose of keeping this muff securely in place. Probably the force of this suction is not very strong; if it were it would hardly be beneficial to the drum of the ear. This is a new use for rubber, but not one, it is to be feared, that will materially assist the Middle East planters in disposing of the 300,000 tons of crude rubber which they expect to have ready for the market within the next four or five years. The accompanying illustration shows a pair of these hard rubber ear muffs with supporting arms that go up over the head. The inventor, Harry Markoff, of Stamford, Connecticut, has applied for a patent.

WIRE WHEELS AND QUICK TIRE CHANGES.

One of the principal advantages pointed out for the wire wheel for automobiles is that on account of its lightness an extra wheel and tire can be easily carried to replace a damaged wheel or tire. Further improvements in the construction of the wire wheel have been made by The McCue Co., of Buffalo, New York, the principal feature embodied in these improvements, as will be seen in the drawings herewith, being that the portion of the rim against which the tire rests is perfectly flat and smooth, avoiding corners or projections which are liable to cut or pinch the tire or tube.



MCCUE WIRE WHEEL
Q. D. ROW

SECTION OF THE RIM
REVERSED

The grooves in which the outer ends of the wire spokes are attached are pressed in the rim, which allows this part to be made integral with the body of the rim and at the same time to add strength to the wheel. It is also pointed out that this construction adds to the radiating surface and aids in keeping the tire cool. Another feature of this wheel is that the rim portions are reversible, in order to accommodate either clincher or straight side tires.

RUBBER MILLINERY.

In the millinery parlors of a New York department store there was recently exhibited a lady's trimmed automobile hat, of which rubber was the chief component material. Skilful treatment in the course of manufacture had given it the appearance of a lusterless taffeta, and it was claimed that the creation would suffer no injury to shape or color, no matter how much it might be exposed to rain, wind and dust.

THE HANDY RUBBER Mallet.

Every automobile owner has had the experience of trying to place a tire on a rim and of having to pound both tire and ring to get them in their proper positions. By this method many tire casings have been weakened and rings bent by the inadvertent use of steel hammers.



The rubber mallet illustrated herewith overcomes these disadvantages and eliminates all possibility of damage. The head is made of soft rubber and the handle of hickory. It is capable of withstanding a powerful blow, and there is no danger of denting or damaging the material which is being worked upon. This tool can also be used in repairing windshields, in working around the body of a car, and in fact is useful in any place where the machinist's hammer is worthless on account of its steel head. It takes the place of the ordinary wooden mallet and often of the steel hammer. [The American Auto Supply Co., New York City.]

A POCKET RUBBER DRINKING TUBE.

All those people who lie awake nights trying to contrive methods of eluding the ubiquitous germ, will be pleased to know that a little rubber tube has been devised, to be carried in the pocket, which has one end adapted to going over the ordinary faucet, while the other acts as a mouth-piece. In this way, it is contended, one can get a perfectly sanitary drink. It is difficult to see, however, how this has any advantage over the collapsible rubber cup, which enables one to drink in sanitary fashion and at the same time see what he is drinking.

A CURRENT PHRASE ILLUSTRATED.

That expression, "Talking through your hat," is not particularly chaste English, but everybody seems to know what it means, and the Michelin Rubber Co., in a leaflet recently distributed to the trade, illustrates this expression by showing the picture of a man who looks like a lobbyist or a promoter—whose hat is made up of a series of tires with ten visible treads. The text that accompanies this illustration is an argument on the part of the Michelin people with intent to show that their plain tread contains considerably more rubber for the money than these fancy treads, which they refer to as "sculptured tires." It is a humorous conceit, as will appear from the reproduction herewith.

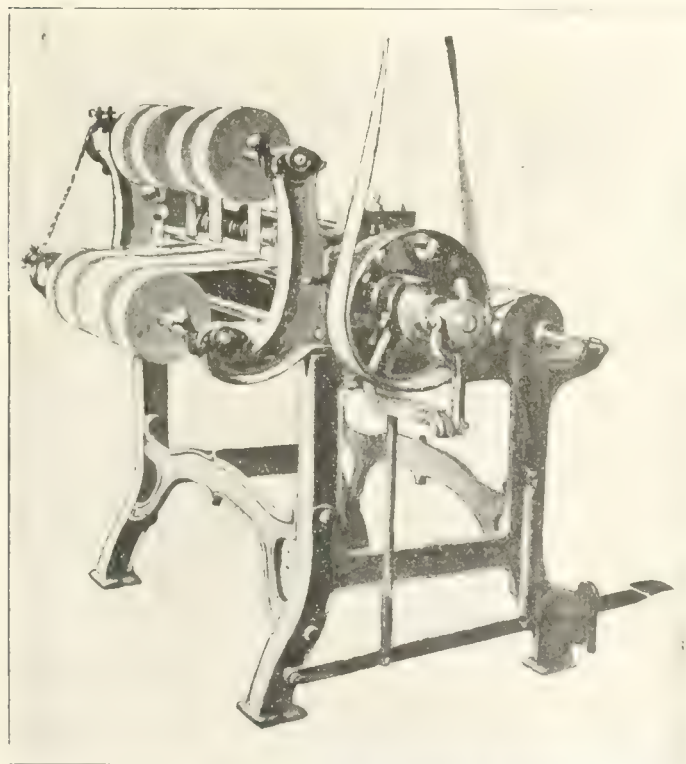


New Machines and Appliances.

KEYSTONE RUBBER SLITTER AND REWINDER.

ONE of the newer types of rubber slitting machine is shown in the accompanying illustration. This apparatus, which is known as the Keystone, is designed for cutting narrow widths of material from wide rolls and rewinding these smaller rolls in the one operation. It has found a wide use in slitting rubber in various forms, as well as for cutting cloth for insulation purposes.

As seen in the illustration, the rewinding shafts are driven by a chain and sprocket instead of by a leather belt, in order to eliminate slipping. For the purpose of maintaining a uniform tension on the rewinding bar, a slipping friction is provided. This causes the rolls to be wound with a uniform hardness which, however, is variable by means of an adjustment of the rewinding tension. The cutting knives are ground in a slightly cupped shape so that they will remain sharp as long as possible. The machine is equipped with special thrust collars which provide a means of taking up any wear in the ends of the knife shafts. This keeps the cutting edges close together and makes regrinding less frequent. A single set screw holds each cutter in position and each knife can, therefore, be set very quickly for



KEYSTONE SLITTING AND REWINDING MACHINE

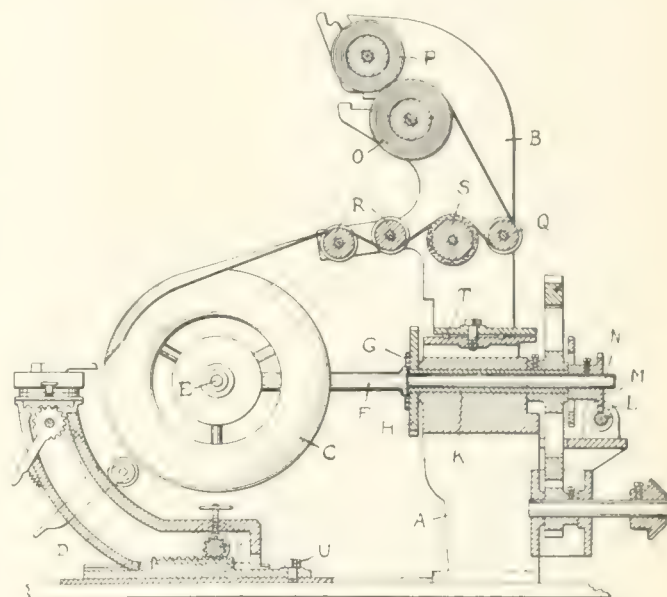
the different widths to be cut. Special cutters are made to cut strips as narrow as three-eighths of an inch.

There is provided a sliding rule which swings down to the knives and results in a great saving of time when setting the machine for different sizes of work. The rewinding bars, which must be taken out each time a full-size roll has been rewound, are held in their bearings by means of an automatic latch cap, the mere lifting or lowering of which releases the roll or locks it in place. [Charles Beck Co., 609 Chestnut street, Philadelphia, Pennsylvania.]

AUTOMATIC MACHINE FOR BUILDING PNEUMATIC TIRES.

UNTIL a comparatively short time ago motor vehicle tires were built up by the slow and uncertain method of laying on the fabric and rubber by hand, this process often resulting in unevenly-stretched layers. Recently, however, a number of machines have appeared on the market for accomplishing this work automatically. One of these, the subject of a recent United States patent, is briefly described herewith.

Referring to the drawing, *A* shows the base of the machine frame, *B* the roll-carrying head, *C* the core over which the tire is built up, and *D* a pivoted arm which carries various tools for finishing the tire during the building process. The core *C* is fastened to the stub shaft *E*, mounted on a bracket *F*, and is actu-



AUTOMATIC TIRE BUILDING MACHINE

ated by a set of bevel gears (behind the core and not seen in the drawing) through the spur gears *G* and *H*. This set of gears is mounted on the tubular shaft *K*, which carries a change speed gear set. By means of the worm *L* and the gear *M* attached to the shaft *N*, the core *C* may be made to assume any position from the horizontal to the vertical.

The head *B* carries a roll of friction cloth, layers of which are stretched and laid on the core *C* as the first step in the construction of a tire. This friction fabric is wound on a strip of ordinary cloth in order to separate the layers as they are rolled up and to prevent them from adhering. One of these rolls is indicated at *O*, while *P* shows a roll on which the protecting cloth is wound as the friction cloth is unwound, the weight of the roll *P* being sufficient to drive it as it rests against the periphery of the roll *O*. The drawing shows a strip of material passing over the stretching and guiding rolls *Q* and *R* and the brake roller *S*, and being wound on the core. As the fabric is wound on the core it is stretched lengthwise by means of this brake roller. It is absolutely essential that the fabric be laid on the core evenly and that their center lines coincide. It often occurs that the fabric is not wound evenly on the roll *O*, and as a result it will not wind truly on the core unless some means is provided to overcome the difficulty. To accomplish this result the head

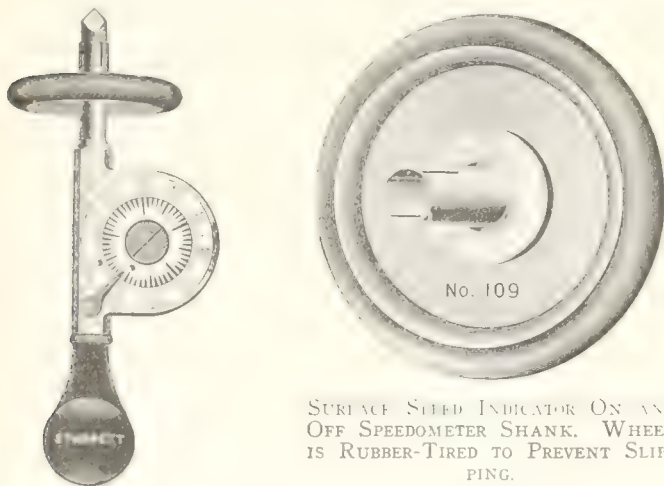
B is mounted on a roller bearing *T* so that it will easily follow the direction of the core *C*.

As each layer of fabric is placed on the core, various rolling, compressing and stitching tools carried by the arm *D* are brought into play to form the material closely about the core. This arm is pivoted to the base at *U* so that it may be swung around to present the various working tools to the tire. After each layer of fabric is laid on the core, a stock rack is moved over in line with the tire. This rack contains the various materials entering into the tire and these are fed onto the latter in layers by means of a carrier. For this purpose the core is made to rotate in the opposite direction. After each layer of material is laid in place by the carrier the rack is swung out of position and the arm *D* with a suitable tool is swung back to work the material into a finished surface. These operations are continued until the tire is built up. In order to place the wires in the beads or rim edges, the core is turned to a horizontal position, first on one side and then on the other.

This machine is claimed to greatly facilitate the manufacture of tires owing to the fact that the core may be power-driven at varying speeds, and also for the reason that the tool arm and stock rack can be moved away from the core and the latter turned to various positions. This makes it easy for the operator to reach all parts of the tire to perform the trimming and finishing processes. [U. S. Patent No. 1,042,649.]

A SURFACE SPEED INDICATOR.

In almost every machine there is a certain speed at which the greatest amount of work is turned out or at which the greatest efficiency is obtained. This is especially so in rubber working machinery. For this reason it is often of advantage to know the approximate speed at which the surface of a pulley is traveling without having to calculate it from the revolutions. The illustrations show an attachment intended for this purpose, and which has been designed for application to an ordinary shaft speedometer.



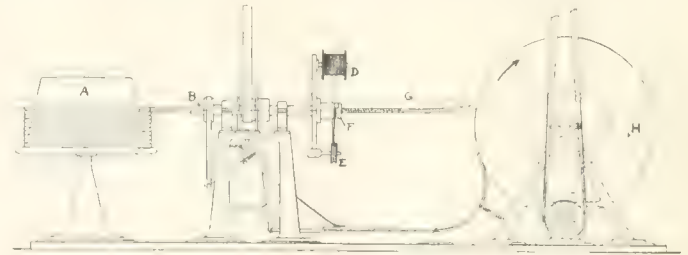
SURFACE SPEED INDICATOR ON AN OFF SPEEDOMETER SHANK. WHEEL IS RUBBER-TIRED TO PREVENT SLIPPING.

eter. It consists of a rubber-banded wheel which may be instantly slipped on or off the spindle, and which in operation is pressed against the face of a shaft or pulley for a definite period, such as a minute. By dividing the resulting revolutions of the dial by 2, the number of feet per minute the surface of the object is traveling is obtained, since each turn of the small rubber-tired wheel means a linear movement of six inches. The device is not claimed to be exactly accurate, but adequate approximate results are obtained by its use. [The L. S. Starrett Co., Athol, Massachusetts.]

A citizen of Sabine, Texas, has invented a life preserver consisting of two tubular rubber belts, one going around the waist and one fastening under the chin. The idea is to inflate both of these with air and fasten them properly in position and then float as long as the emergency may require.

ARMORING MACHINE FOR HOSE AND CABLE.

AMONG the rubber working machines which have been recently placed on the foreign markets, is an automatic device of simple construction for placing reinforcement on hose. It is designed especially for winding metal armor on rubber hose or

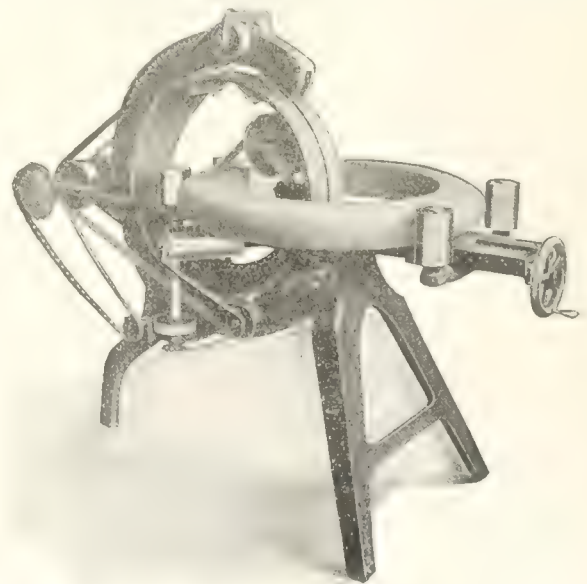


MACHINE FOR WINDING METAL ARMOR ON HOSE.

cable, but may also be employed in coiling sheet iron, rope, etc., and it will handle round, half-round or flat wire equally well. The hose to be armored is coiled on the reel *A* and passed through the hollow shaft *B*, emerging from the opposite end. The wire armor is wound on the reel *D* and the loose end passed over the pulley *E*, from which point it is carried up to the guide *F* surrounding the hose *G*. As the receiving reel *H* is set in motion through a belt from the transmission shaft, the hose is pulled forward at a definite speed. Another belt sets the shaft carrying the coil of wire in motion, so that the armor is evenly coiled around the hose. [W. Furstenberg, Bruxelles-Anderlecht, Belgium.]

A CONVENIENT TIRE WRAPPING MACHINE.

One of the newer tire wrapping machines, designed for automatically wrapping the treads of automobile tires preparatory to vulcanizing, is shown herewith. The tire lies flat on the table and horizontal rollers and is made to revolve horizontally against the stationary rollers in the rear and the adjustable rollers at the front as the tread is wrapped. The rotary drum carries a spool upon which is wound the tape for wrapping the tire. This drum revolves on fiber rollers and is driven by two



MILLER TIRE WRAPPING MACHINE.

belts. As the drum revolves it carries the spool around with it, wrapping the tape tightly around the tread. At the same time the tire advances laterally so that when it has made one complete revolution the tread is entirely covered. This machine is built for operation either with or without an electric motor, and weighs, ready for shipping, 800 pounds. [Charles E. Miller, Anderson, Indiana.]

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE PRICE OF RUBBER.

THE low price to which plantation rubber has fallen has given rise to a panicky state of mind in England, which doubtless finds no parallel in America, where, I understand, rubber plantation shares are by no means so widely held as they are in Great Britain, as the result of the boom. Perhaps the most interesting outcome of the situation is the number and variety of the suggestions put forward by writers in the "Financial Times" and other journals as to how the long-suffering shareholders—many of whom, by the way, have been receiving dividends of 100 to 200 per cent.—are to get level with the greedy and unscrupulous manufacturers. No one gauges, says one scribe, the gigantic profits being made by the manufacturer. Probably not—for the best of reasons. The position no doubt is irritating to many people, but I do not know that these persons shed many tears of sympathy with the manufacturers, who were at their wits' end to know how to tide over the troubles caused by the high prices of three years ago. One writer suggests that reclaimed rubber is playing a large part in the débâcle and angrily suggests that the Board of Trade should make it obligatory for goods containing reclaimed rubber to be branded as inferior. But why stop at reclaimed rubber as reducing the amount of new rubber used? Why not brand the admiralty mixings for containing so much zinc oxide? After all that has been adumbrated as to the extended use of the rubber pavement as the panacea for over-production, it comes as a cruel blow to hear that the rubber pavement at the Savoy Hotel is to be replaced by asphalt, the main reason being that as the bulk of the vehicles are rubber tired, a noise deadener is not required. Further, it is said—and no doubt with truth—that the oil dropped from motor vehicles damages the rubber.

The correspondents, of course, include those who are astonished at the ruling premium on Fine Hard, in the face of the fact that their own chemists have shown that there is no ground for the statement that the wild product is superior to that from the immature plantation trees. Perhaps Professor Dunstan's statement that the latter generally is not equal to Fine Hard will be seriously regarded by those authorities who persist in ignoring the fact.

The topic of the moment is the proposed Selling Exchange, as to the advisability and prospect of which considerably divergent opinions are expressed. I do not propose to discuss the matter here, and shall merely say that perhaps not unnaturally the idea does not meet with the approval of the merchants, who under present conditions buy the rubber and resell to the manufacturers, these latter not attending the auctions personally. It is hinted that the merchants have been doing very well lately, in the falling market; and shareholders who say that the manufacturers are making abnormal profits might correctly include the merchants in their criticisms.

LEYLAND & BIRMINGHAM RUBBER CO., LIMITED.

Presiding at the annual meeting of this company in September—when a dividend of 7½ per cent. for the year was declared—Mr. R. T. Byrne made special reference to the fire of January last, already referred to in these notes. They were much indebted, he said, to Mr. Roberts, of the Wood-Milne Company, for placing his works at their disposal for certain purposes. The new buildings which are now being erected will afford 20,000 square feet of extra space over that occupied by the burned premises. Under the management of Mr. R. T. Goudie and Mr. Anderson, the Glasgow works for garments and golf balls

had made good progress, labor conditions being more favorable than at Leyland. Mr. Byrne said with regard to the price of rubber that he preferred a steady price to a low one, as when rubber was cheap their customers were exacting in efforts to obtain what he called absurd prices.

ACETONE EXTRACT.

The article on this subject by Professor Jones in the September issue of the INDIA RUBBER WORLD will doubtless have interested many readers. Beyond the particular points brought out, it serves to emphasize the fact so frequently ignored—that rubber analysis, if it is to be at all accurate, is a matter taking up considerable time and cannot therefore be adequately remunerated by a very few shillings. The matter of the difficulties surrounding rubber analysis was referred to by Professor Dunstan in a recent lecture in London, and it is somewhat depressing to hear that despite all the methods advocated in recent years by German chemists, practically no progress has been made in the direct estimation of rubber in a compound. With the methods advocated by Professor Jones to avoid sources of error there will probably be no disagreement among rubber chemists. Undoubtedly in some forms of extraction apparatus the acetone extraction takes place at considerably below the boiling temperature—a matter calling for remedy. In addition to paraffin and mineral oil, bitumen from mineral rubber might also have been mentioned as occurring frequently in the acetone extract. This, of course, does not affect the rubber extract determination, as, being unsaponifiable, it goes into the ether extract of the soap solution. In the case of commercial analysis the term acetone extract is somewhat loosely used and analyses giving reports should always state clearly whether the extract is given as a whole or has been subdivided so as to give the actual organic extract derived from the rubber content of the sample. It certainly has been generally accepted that vulcanization increases the resinous contents of rubber, and it is interesting to note that Professor Jones combats this idea, his experiments having shown that where this increase has been found it has been due to the mixing on the rolls and not to the subsequent vulcanization. He says that where the compound is properly made there is no increase in organic extract at any part of the process, this evidently being due to wrong procedure, tho whether in the composition of the mixing or the method of mixing is not specified. The point, however, is of interest, and is one, moreover, on which more is likely to be heard.

W. T. GLOVER & CO., LIMITED.

On the occasion of a general meeting in Manchester of the Institution of Mining Engineers a large party of members paid a visit to the Glover Works on September 25, and were entertained at luncheon, Mr. E. A. Claremont, the managing director, replying to the vote of thanks. The works of this company, now situated in Trafford Park, were established 45 years ago, in Springfield lane, Salford, the move to the present site being made in 1900. The business has shown a steady increase and further extensions are now in progress. From the point of view of this journal, it is interesting to note that tho until quite recent years the firm purchased its rubber and rubber compounds from rubber manufacturers, it now has a complete rubber manufacturing plant. As it has also a complete wire drawing and twinning plant, the company is quite self-contained. Cables for mining use have long been a specialty, so the mining engineers naturally found a great deal to interest them in their inspection, large numbers of cables, from double wire armored solid bitumen shaft cables

weighing up to 7 or 8 tons, down to flexible trailing cables for coal cutters, being seen in various stages of manufacture. A comprehensive display of accessories for suspending, cleating and jointing mining cables also attracted much attention.

A demonstration was given of the fire-resisting cables, these being braided with asbestos and specially prepared yarns. Besides vulcanized rubber, paper and bitumen are now largely used, the last particularly for mining cables. The raw bitumen is cut up and mixed in large rolling machines with the various ingredients necessary to make it into a suitable compound for applying to the cable. This compound is then further masticated and applied to the stranded cable by means of forcing machines. All cables are immersed in water tanks for a considerable period to prove their immunity from faults or slight mechanical defects. For lead-covered cables a more drastic test is applied, the firm having patented a special tank in which hydraulic pressure is applied to the cables at 100 lbs. per square inch. The only rubber mentioned to the visitors as being used for insulation was fine hard Pará, a statement which would probably not be too pleasing to holders of plantation shares.

LEGAL CASE.

In a recent criminal case at Manchester involving the purloining of washed and masticated rubber from Messrs. Moseley's works, a passage of arms took place between the solicitor for the defendants and Mr. Blick, the successor of the late Mr. Blundstone as manager of the Messrs. Moseley's works. The solicitor asserted that the rubber in question could not be identified as having come from one particular works, while Mr. Blick said he had no doubt whatever that it was his firm's rubber, tho when pressed on certain points of detail he said he was not there either to educate solicitors or to enlighten the trade generally on knowledge he had acquired during his extended experience. His identification was complete both because of the black streaks in the rubber due to the outer skin having been left on in this particular case, and also by the width of the pieces of washed rubber being exactly the width of the machines used by his firm. Further, the marks of corrugation had the same pitch as those given by his firm's machines, which machines were made by the Messrs. Moseley themselves. It was not usual in the trade to leave the skins on in the washed rubber, tho they did it in this particular case. On being shown another piece of washed rubber with black streaks in it the witness would not agree that it was similar to his firm's, the end of further questioning being a remark by the stipendiary magistrate that the court had to accept what the witness said as an expert. He, the magistrate, did not know much about rubber. In this case one may remark in passing that the magistrate was in the rather unusual position of listening to expert evidence on one side only. When the High Court judges have to deal with rubber, they usually find experts who totally disagree with each other. The prisoners in the case were duly convicted. The rubber in question, I may say, in conclusion, changed hands more than once. It was first sold at 2s. per lb., resold by the buyer at 3s. 5d., the last purchaser selling at 3s. 10d.

EUROPEAN RUBBER MANUFACTURING VERY DULL.

A prominent member of the European rubber trade states, in a letter just received, that he has recently made an extensive tour among the rubber manufacturers of Europe and finds the universal complaint of poor business. He mentions one manufacturing concern in Germany which has just discharged 1,700 workmen, another factory in the same town having discharged 800 workmen, while the plants that are running are, as a general thing, operating only on half time. The manufacturers attribute this condition to the drop in rubber prices caused by the over-production of plantation rubber, but our correspondent does not believe this to be the true cause. He attributes the poor business simply to the reduced consumption.

CHANGE IN BELGIUM'S TARIFF ON RUBBER TIRES.

In accordance with a Royal decree, the ad valorem duty on rubber tires imported into Belgium will be replaced by a specific duty in accordance with Article 4 of the law of June 16, 1905. The new schedules will be as follows:

	Per 100 Kilos (220.4 Lbs.)
Rubber tires for the wheels of vehicles, including those into which other material enters but in which rubber predominates, according to weight—solid tires	65 francs (\$12.54)

PNEUMATIC TIRES.

Shoes for automobiles and motorcycles, with iron-studded protective tread.....	130 francs (\$25.09)
Other kinds	116 francs (\$22.38)
Outer tires for other vehicles of less weight than 21.16 pounds	90 francs (\$17.37)
Above 21.16 pounds	60 francs (\$11.58)

NOTE.—Separate parts of outer tires (tread reinforcements, protective bands, etc.) consisting chiefly of rubber, dutiable the same as complete outer tires.

INNER TUBES.

For automobiles and motorcycles.....	170 francs (\$32.81)
For other vehicles (including complete pneumatics known as "boyaux," or tires for racing wheels, consisting of an outer protective shoe and an inner air-tube)	150 francs (\$28.95)

SWEDISH RUBBER SHOES FOR AMERICA.

An official report from United States Consul General Ernest L. Harris of Stockholm, Sweden, states that the nine rubber factories in that country employ 1,525 hands, and produce goods to the value of about \$2,500,000 a year. Stockholm exports to the United States included rubber shoes to the value of \$80,922 in 1911 and \$137,057 in 1912. These are undoubtedly old shoes intended for the reclaimers.

SALES ASSOCIATION FOR GERMAN INSULATED WIRE MANUFACTURERS.

The German manufacturers of insulated wires have combined in the formation of an association under company rules and regulations for the sale of their product, this association to make all sales, on common account, for its members, who are to be allowed a suitable profit. These manufacturers about a year ago formed an association for price regulation—of which this new company idea is probably the natural outgrowth. Prices are said to have shown no particular change. Telephone and telegraph wires are not to be included in the sales to be made by the new association.

INCREASE IN PROWODNIK CAPITAL STOCK.

The Prowodnik Caoutchouc Co., of Riga, Russia, manufacturing the Prowodnik tire, is reported to be enjoying a very satisfactory business, and to have paid for the last four years annual dividends of 12 per cent. This company has recently increased its capitalization to 12,000,000 roubles (\$6,000,000), this being 3,000,000 roubles (\$1,500,000) in excess of its former capital. One-half of the receipts from the sale of this additional capital stock—sold at 100 above par—has been added to the company's reserve fund, the other half to be devoted to the general working capital.

THE FRENCH ARMY'S VAST RUBBER CLOTHING SUPPLIES. A FRENCH FORECAST OF THE RUBBER SITUATION.

COLONEL FORBES, M. E., a well-known designer of refrigerating apparatus for the United States Navy, and an eminent authority on steam fittings, in a talk with a reporter for THE INDIA RUBBER WORLD, spoke interestingly of the great care which the French Republic exercises in providing her soldiers and sailors with the best kinds of rubber clothing. Colonel Forbes is almost the last survivor of the Americans who served in the French Army in the Franco-Prussian war. Being a student of engineering in Paris when the war broke out, he promptly volunteered and went at once to the front, serving as a sharpshooter and scout until the end of the war. In that war the French had no rubber clothing nor blankets, and such was the churlishness and heartlessness of many French people to their own soldiers that in the terrible winter of 1870-1 it was a common sight to see exhausted soldiers sleeping in the streets of towns and villages amidst snow, sleet and ice.

Colonel Forbes makes one of his inventions for the French army and frequently goes to France. Being a veteran of the army he is permitted to visit all forts and garrisons, and often makes practice marches with old comrades now high in rank on the French General Staff.

Speaking of rubber clothing for that army, Colonel Forbes says that in the chain of defences that make Paris the world's greatest fortified camp there are rubber blankets and clothing for 550,000 men. Every article is rigidly inspected at stated periods and what time has injuriously affected is removed and new clothing substituted. A vast quantity of other rubber goods, including packing, hose and surgical rubber supplies, is kept in the great storehouses, all of which are underground and are served by electric railways.

The lines of defence are three, the outer being almost 70 miles from the centre of Paris. Each line of defence in its fortifications and warehouses is independent of the other, so that if one be taken by the enemy the troops can fall back to the second, or the third, as a finality, and at each line find enough food and clothing, arms and ammunition to keep 200,000 armed men at full power for two years.

Nowhere else are such quantities of rubber clothing and supplies of special medical and army rubber articles kept in stock. In these stores of the defences of Paris there is a good deal that was made in the United States, and which was bought under very rigidly drawn specifications, demanding the highest grade, regardless of price.

EXCLUDING GERMAN RUBBER GOODS FROM FRANCE.

A law has been passed by the French Chamber of Deputies, and was at last accounts before the Senate for final reading, prohibiting the sale in France of certain nursing teats, made in Germany. It is claimed that being necessarily made by the cold vulcanization process, owing to the incorporation in the material of rubber substitutes that cannot be exposed to a high temperature, they cannot be subjected to sterilizing heat after use. The law after reciting these facts, not only provides for the exclusion of the articles in question, but provides that all nursing teats marketed in France in future shall bear, in addition to the maker's name the legend "Pure rubber," and shall live up to it. While the French advocate the proposed law, as a measure of protection for helpless French infants, the Germans claim to recognize in it a further move towards the restriction of commerce with Germany, that is a survival of the policy of *la revanche*.

Ullmann Bros. & Co., of Hamburg, Germany, whose offices were formerly located at Bergstrasse 28, have removed to Bergstrasse 11.

UNDER the caption "The Future of Rubber," "The Bulletin Officiel de la Chambre de Commerce des Colonies," issued in Paris, which has of late bestowed much attention to the condition of the rubber market, publishes, in its non-official section, an article in which the writer considers at some length the conditions which, within the next few years, at the present rate of progress, the rubber producer will be called upon to face.

Starting with the proposition that the year 1918-1919—provided no disaster overtakes them—will see the 532 plantations owned by existing corporations in full yield, the writer claims that their output may be estimated at 300,000 tons. Adding to this the production of Brazil and that of Africa, calculated at between 65,000 and 70,000 tons, there would be a total output of 365,000 to 375,000 tons of rubber, without reckoning guayule, jelutong and reclaimed rubber.

The writer computes the world's consumption for 1913, provided purchasing conditions based on the general prosperity in the United States and Europe are normal, at 120,000 tons; so that an advance in consumption in the six intervening years of 265,000 tons, or, distributed over the entire period, of 44,000 tons a year, would have to take place to bring consumption to a level with production. He does not believe that the rubber industry is likely to progress within the period mentioned to such an extent as to make this increase in consumption likely, and argues that to obviate the disaster that confronts the producer, new uses for rubber must be devised and that this can only be effected by a very material reduction in the selling price.

The article goes on to suggest five francs per kilo (about 45 cents per pound) as a price that would bring out many new uses for rubber and expresses the belief that it could be sold at this price and still pay a good profit to the producer.

RUBBER IMPORTS AT BORDEAUX.

The imports of rubber at Bordeaux are given in an official report of Consul Alfred K. Moe as 3,009,119 pounds for the year 1912, the chief varieties being Sudan Conakry "niggers," Gambian, Labou "niggers" and Labou cakes. He states that the strict enforcement of recent administrative decrees has considerably improved the general quality of forest rubber, enabling it to compete on more equal terms with certain of the plantation varieties. Madagascar rubber, according to this report, was uniform in quality and was easy of sale. The price of Para ranged from \$2.40 to \$2.60 per kilo (2.2 pounds) in January, to \$2.77 in August; plantation crepe which was quoted at \$2.60 in January, went to \$3.09 in March, dropped in October to \$2.18 and closed in December at \$2.50.

THE VALUE OF A PATENT ON GOLF BALLS.

The proprietor of English patent, No. 20,905, sued a firm selling golf balls, made according to this patented process. The courts upheld his suit and awarded him damages amounting to 32,500 francs (\$6,176). The infringers had actually sold 20,000 dozen of the balls.

This success would not have been obtained but for the lucid and precise wording of the patent, the claims of which had been formulated with due regard to prior inventions.

There are in Belgium about 2,000 patents on sporting goods and in England more than 10,000 (as may be seen in the "Dictionnaire des Brevets," published by J. Gevers & Co., of Antwerp).

These patents being arranged in classes, sportsmen who invent an improvement would do well to investigate what has previously been patented, so as to be able to claim exactly the new points of their invention.

THE RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

ACCORDING to a translated official report of the financial department of the Japanese Government, the imports of crude rubber into Japan for the year 1912 amounted to 2,004,010 pounds, valued at \$1,514,560, this being a decrease of 50,854 pounds, \$15,449, from the imports of the preceding year. The following is a comparative table showing the quantity and value of the rubber imports for the two years and the countries from which these were drawn:

	1911		1912	
	Pounds	Value	Pounds	Value
China			267	\$200
British India	121,160	\$118,355	167,063	140,781
British Straits Settlements	1,223,071	691,651	1,214,485	820,891
Dutch India	132,173	80,703	124,904	73,171
French India			3,805	3,874
Great Britain	426,013	467,696	242,620	230,663
Germany	4,588	3,563	25,600	19,307
United States	112,170	126,363	158,176	160,556
Mexico			113	100
Other countries ..	35,689	41,678	66,977	65,014
	2,054,864	\$1,530,009	2,004,010	\$1,514,557

In spite of the above figures, the rubber industry has made great progress in Japan, and reports of crude rubber imports in the future will show large increases. For example, manufacturers of weatherproof insulated electric wire, started several years ago, have now assumed considerable importance. Jirikisha tires, first manufactured in Japan at Tokio some years ago, are now made also by rubber concerns at Kobe and Osaka, who, by producing them in large quantities, are able to quote lower prices. In these two last named cities the rubber trade has steadily advanced, surpassing that of Tokio which was started some time earlier. The Kakuichi Rubber Co., of Osaka, as well as other works in that city, has arranged for production on a larger scale than heretofore, and the Osaka branch of the Yokohama Electric Wire Works has plans under way for the extension of its plant, while the Settsu Rubber Co., Limited (Nishinomiya, Kobe), The Taisho Rubber Manufacturing Co., Limited (Kobe), and many other companies have been established.

Of the crude rubber imports from Singapore during 1912, Borneo rubber comprised the greater part, with plantation Pará next in importance; while for 1911 the Singapore importations consisted of one-half Borneo, three-tenths plantation Pará (which constituted 30 per cent. of the total exports of that place for the year), and the remaining two-tenths from India. In the imports of crude rubber from Great Britain, Brazilian Pará occupied first place, and of the various grades "hard fine" was received in greatest amount, with a small quantity of African. Imports from the United States and Germany were similar in proportion. From Dutch India the Borneo variety was first in importance, with jelutong next, and a small proportion of gutta percha. Manila and British India supplied principally Borneo rubber.

Crude rubber is imported generally through crude rubber merchants, the large manufacturers ordering in quantities as demanded by the immediate needs of their business, so that no stocks are carried in hand. The market has not shown any great fluctuations, the price per pound of plantation Pará in 1912 was \$0.74 to \$0.75. The highest and lowest prices were as follows:

	April-May	Nov.-Dec.
Borneo rubber	1.27 yen (\$.64)	1.14 yen (\$.57)
India rubber	" "	1.09 yen (.55)
Plantation Pará rubber..	1.95 yen (.98)	1.58 yen (.79)

The decrease in importations of crude rubber for 1912 was due largely to the general business depression which followed the death of the late Emperor. But the trade in one particular article of commerce which consumes large quantities of rubber was not seriously affected by this dullness—and that was the bicycle industry, this article having come to be regarded as no longer a luxury but an actual necessity. The 1912 imports of bicycles and their parts amounted to \$1,558,118, exceeding those of the previous year by \$58,758, tho the actual number of machines received during the year fell off 4,815. Under the old tariff schedule in force until July 13, 1911, bicycles were admitted into the country under an ad valorem duty, but the law enacted at that time places a specific duty on bicycles. Prices for the year ranged from 30-200 yen (\$15-\$100), those at 70-130 yen (\$35-\$65) being most in demand. A large number of bicycles are also constructed in this country, from parts imported; and these showed a falling off in price during 1912, due largely to increased competition. Among the domestic concerns engaged in the construction of these machines from imported parts is the Premier Cycle and Motor Car Co., Limited of Wakinoheima, Kobe—under the same management as the Dunlop Rubber Co. (Far East), Limited, of that place.

An investigation has been made by the military department of the Japanese Government as to the number of automobiles and bicycles in Japan, and the official count shows, at the end of 1912, 426 of the former and 367,820 of the latter. The automobiles are most numerous in Tokio, Yokohama and Mie-Ken, but while these cities possess a fair share of the bicycles in this official count, other districts are credited with 259,775 of the total number. Mie-Ken is a district in which are situated our Imperial shrines, "Ge-Gu" and "Nai-Gu," worshipped by all Japanese, from the Emperor and Empress, the princes, princesses and other nobles, down to the lower classes; and the automobiles and bicycles are employed largely in conveying the Japanese people to worship at the shrines of their ancestors.

The Sanyo Rubber Co., Limited, was established by Messrs. M. Ido, K. Nakamura, T. Yamada, etc., in September, at Suma, Hyogo. Its capital is \$17,500, one-fourth of which is already paid in. It will manufacture toy balloons, etc.

Mr. K. Kobayashi, who was editor-in-chief of the "Gomu Shimpō" from October, 1912, to September, 1913, left that post to become an officer of the Imperial Household Department.

FENDERS FOR AUTOMOBILES.

The Cuban legislature has recently passed a law making it compulsory upon automobiles-used in that island to be equipped with a fender—which is quite different from the bumper sometimes used in this country. This fender looks like a pneumatic tire projecting in front of the machine. It serves a double purpose—it breaks the impact in case of a collision and thus helps to preserve the car; and, better than that, it is sufficiently low to act as a scoop when striking against a human being. While this fender has never been used in this country, it is the invention of an American; and in view of the fatalities attending the use of the automobile, chronicled regularly every morning in the news columns of the papers it would seem as if the time was about ripe for some such equipment on American cars.

Commercial Agent Ralph M. Odell, of the Department of Commerce, in a report on the development of Anglo-Egyptian Sudan, states that there are many good rubber trees in the southern part of the country, from which a good quality of rubber is obtained, and that a company is now preparing to extract it along modern lines.

RUBBER PLANTATIONS IN DUTCH GUIANA.

(Extract from Recent Correspondence.)

THE plantation "Nieu Clarenbeek" changed owners early in the year. The lucky purchasers are members of an American firm with headquarters at Chicago. This property is very extensive, and all the trees are now ready for the tapping knife. Great returns are expected from this estate, and the new owners are to be congratulated for their foresight in selecting and acquiring such a modern rubber plantation. The manager of the corporation—the Dutch Guiana Culture Co.—visited the colony, and remained for several months on the estate, making all the necessary improvements and arrangements preliminary to starting operations. He returned to Chicago some weeks ago, and before his departure openly expressed his entire satisfaction with his company's investment and with the colony in general. Nieu Clarenbeek is one of the best rubber estates in the colony and will be producing largely in the near future.

Several other plantations have been doing well also, and there is no doubt that in the course of a very short time the exports of rubber will compare favorably with other producing lands. Had the planters of Surinam, however, given more attention to cultivation of Pará rubber some 15 or 20 years ago, today Dutch Guiana would have stood high in exports and would have rivaled many of the large producing countries. As it is our rubber exports only began in 1911, and from that time to August 31 of the present year, according to government statistics, about 4,327 kilograms (9,519 pounds) have been exported. The present low prices of the product have also had a bad effect on this year's production, for many of the plantation proprietors have discontinued tapping operations pending a more lucrative price. This will materially lessen the exports—which were expected to be high—for 1913.

RUBBER VINES TO BE GROWN IN THE BAHAMAS.

A REPORT made by United States Consul Henry D. Baker, recently on special duty in India, states that an attempt is to be made to cultivate a rubber producing vine, *Cryptostegia grandiflora*, in the Bahamas on a large scale, thus realizing an idea, long entertained that these fertile islands could be made an important source of rubber.

The enterprise will be financed and managed, according to the report, by a syndicate having headquarters in Boston, Massachusetts, with a capital of \$500,000; and a tract of upwards of 1,000 acres of land has been acquired near Nassau, N. P. The shoots, of which about 5,000 will be set out to the acre, are said to make rapid growth, attaining in six months a length of 12 to 30 feet. The vine will be cut at twelve months and each plant is expected to yield about 2 pounds of shrub, from which 2 per cent. of rubber can be extracted. This is equivalent to about 200 pounds of rubber to the acre.

In addition to rubber, the plant furnishes, as a by-product, a valuable fibre that can be spun and woven into an excellent fabric. The woody substance, when worked out, is said to yield a cellulose that can be profitably used in paper making.

The process of extracting the rubber is a destructive one, the plant being crushed or ground up after the manner of the sugar cane and the juice extracted treated by a secret process to obtain the rubber which the report describes as worth, in the London market, within 8 cents per pound of the price of the best quality Pará.

AMERICAN RUBBER ROOFING IN TRIPOLI.

Imports from America to Tripoli for 1912 amounted to \$510,486 and included rubber roofing to the value of \$2,000.

A RUBBER PLANTER LEAVES WEST AFRICA FOR SOUTH AMERICA.

AMONG the interesting rubber men from abroad who have recently visited New York is Mr. Lachlan A. Campbell, of London, who has spent the last ten years in the rubber country of West Africa, acting for the greater part of that time as manager of rubber planting enterprises. In his opinion, plantations in South America offer greater promise than those of West Africa, and he is planning to transfer his activities to the country along the Amazon.

Mr. Campbell speaks of the disadvantages under which the West African rubber trade is now being carried on, chiefly because of the fact that two-thirds of the *Landolphia* vines—which have been the principal source of African rubber—have been destroyed by the natives in their anxiety to get the utmost rubber in the briefest space of time. Rubber gathering in that section began 25 years ago, and up to quite recently the native process has been to girdle the vines with a deep incision and at frequent intervals, or in some cases—where the vines were small and susceptible of such treatment—to cut them off at the roots and crush them in a macerating machine; both processes being absolutely destructive to the vine. Mr. Campbell's operations have been chiefly confined to Southern Nigeria, near the Cross river; and in that section, and in fact through western Africa generally, the natives are now being taught a better system of tapping, which extracts the latex but does not destroy the vine. But the injury already done is irreparable.

Plantation enterprises in southern Nigeria have not as yet been very successful, but there are several plantations in the Gold Coast country—particularly in the vicinity of Axim—where some thousand acres have been planted to *Hevea*, which are quite promising. These *Hevea* experiments have been carried on during the last three years and seem to assure better results than the previous *Funtumia* experiments. Botanists have generally classified the *Funtumia elastica* as being the same as the *Kickxia Africana*, but Mr. Campbell thinks they are wrong in this matter and that the closely related they are not the same tree. *Kickxia* is indigenous to West Africa, but, in his opinion, *Funtumia* is not a native of that country.

In addition to the great destruction of the *Landolphia* vine there is another reason for the falling off of wild rubber shipments from West Africa—and that is the fact that the natives find an easier method of livelihood in planting the cocoa tree, which can be planted with very little clearing, is easy to care for, and the pods of which are picked and dried with comparatively little work. A great many of them have abandoned rubber gathering and also the cultivation of the oil palms for the raising of cocoa trees.

Mr. Campbell believes that the Congo atrocities are absolutely a thing of the past, but he says there is no doubt that they existed under Leopold's administration and that the stories of horrible mutilations that came from that country at that time were in no way exaggerated.

OUR TRADE WITH MEXICO.

Of a total decrease of \$9,488,236, in the foreign trade of Mexico for the year that ended June 30, 1912, \$7,797,755 of this total represented the falling off in commerce between that country and the United States, divided between imports and exports in the amounts of \$7,360,656 and \$437,099, respectively. Mexico's total foreign trade for the year reached \$240,325,720, the imports into the country amounting to \$91,331,155, of which \$49,212,836 worth were from the United States, \$448,502 of that amount representing manufactures of rubber. The total value of the exports from that country for the year was \$148,994,564, the United States taking \$112,729,956 of these exports, of which \$10,896,373 represented rubber, guayule and a small proportion of chicle.

Some Rubber Planting Notes.

THE BOTANIC GARDENS OF SINGAPORE AND PENANG.

IN the last annual report on the Botanic Gardens at Singapore and Penang—Straits Settlements—a paragraph devoted to "The Economical Garden," records the loss of Pará rubber trees by wind and states that the condition interfered also with tapping experiments, the total yield for the year 1912 having amounted to 2,484 pounds, a slight advance over that of 1911, but about 400 pounds short of the 1910 production. It contains also the information that the demand for seed and seedlings absorbed the entire available supply of the former and nearly the whole of the latter, 395,300 seeds and 9,550 seedlings having been distributed during the year, the revenue from their sale amounting to \$3,456, and from the sale of rubber to \$4,520. The Penang report mentions a yield of 13½ pounds for the year from a 27 year old Pará tree, this figure representing its maximum yearly yield to date. This tree has been tapped continually since 1895 and during that period has produced slightly over 85 pounds of dry rubber. Since publication of the previous report, Mr. I. H. Burkill has been appointed Director of Gardens, succeeding Mr. H. N. Ridley, under whose direction they were formerly conducted.

VALLAMBROSA RUBBER CO., LIMITED.

For the five months ending August 31, the amount of rubber harvested on Vallambrosa Estate was 184,000 pounds, compared with 174,300 pounds for the same period in 1912. On the Buki Kraiong Estate, the quantity harvested during the same period was 43,100 pounds, compared with 27,700 pounds for the same period last year.

PHENOMENAL INCREASE IN RUBBER EXPORTS.

During the first seven months of the current year, there was exported from the Federated Malay States, according to a report made by United States Consul General Edwin S. Cunningham, at Singapore, Straits Settlements, 12,265 tons of plantation rubber, compared with 8,071 tons during the same period in 1912. The value of this year's exports of rubber is given by the consul as \$21,022,746, and it paid duty to the Federated Malay States amounting to \$524,567.

SAPUMALKANDE RUBBER CO., LIMITED.

An interim dividend of 4 per cent., equivalent to 9½d. per share, has been declared by the directors of the above company for the year ending December 31, 1913.

GOLDEN HOPE RUBBER ESTATE, LIMITED.

The directors of the above company have declared an interim dividend of 7½ per cent., equivalent to 1s. 6d. per share for the year ending December 31, 1913.

THE FEDERATED MALAY STATES INSTALL DAVID BRIDGE MACHINERY.

The Department of Agriculture for the Federated Malay States recently ordered a complete experimental rubber vulcanizing plant from David Bridge & Co., Manchester, England. This plant when finished will constitute one of the most modern and best equipped laboratories for the testing of rubber in a thoroughly practical way anywhere in existence. It will be housed in a building erected specially for it and will include a vertical steam engine; a horizontal steam engine; an improved washing mill; an improved mixing mill; a three-bowl calender; a hydraulic vulcanizing press; an "Autoclave" press or combined hydraulic press and vulcanizing pan; a da Costa coagulator; a vacuum drying plant, a combined smoking and drying apparatus; Schopper, Schwartz and Martens machines for testing physical qualities of rubber, and a Breuil elastodurameter.

INCREASED RUBBER ACREAGE IN JAVA AND SUMATRA.

According to reports from British consular officials in that section, the acreage devoted to the cultivation of rubber in Java and Sumatra, as well as the output of that product, is steadily increasing. According to one report, the exports during 1912 were 100 per cent. larger than for the preceding year and consisted chiefly of *Ficus* and *Hevea* rubber, only small exports of *Castilloa* and Ceara being reported. The area planted to rubber at the end of 1912, as near as could be ascertained by the British vice-consul for the district of Medan, was 208,000 acres.

COFFEE VS. TEA AS A CATCH CROP WITH RUBBER.

While "rubber cum tea" has engaged to a large extent the attention of planters in Ceylon, in Sumatra it is "rubber cum coffee" that constitutes their favorite crop, and, already concerned at the encroachment by Far Eastern planters on their rubber business, planters in Brazil are now beginning to recognize in the Far East a possible rival in the coffee market. The fact that in the Dutch East Indies, in Sumatra particularly, rubber planters were reported as finding large profits in the cultivation of "Robusta" coffee, as a catch crop with rubber, induced the government of the Brazilian province of Sao Paulo to dispatch a commissioner to the East, for the purpose of learning how much truth there was in the statement. Dr. Navarro, the envoy in question, has recently returned from his mission and his report is calculated to give comfort alike to coffee and rubber growers.

It appears that the growing of coffee, as a catch crop with rubber, has not proved profitable, the coffee developing at the expense of the rubber; and its culture has consequently been in large part abandoned, especially by English-owned plantations. The extent to which the Dutch planters in Sumatra have taken up coffee growing may be gathered from the fact that the Brazilian commissioner visited one plantation on which there were 180,000 rubber trees and 1,159,000 coffee plants; another had 68,820 rubber trees and 547,000 coffee plants. In every instance the "Robusta" was the variety of coffee favored.

A steady falling off, for several years, in the volume of coffee shipped, would indicate that the coffee plants were being gradually eliminated by Dutch East India growers, who are returning to the production of rubber exclusively as a commodity more stable alike in demand and in price.

REDUCED SHIPMENTS OF PARA RUBBER.

That the effects of the present low prices of rubber are making themselves felt in producing circles is indicated by a recent report made by George H. Pickerell, United States Consul at Pará, on the decline in Brazilian rubber shipments. The consul embodies in his report a table showing the shipments of rubber to the United States from the ports of Pará, Manáos, Iquitos and Itacoatira during July, 1913, the first month of the 1913-1914 rubber season, to have been 4,189,454 pounds, as compared with 5,627,602 pounds for the corresponding month of 1912. According to the consul, the falling off is due to a refusal on the part of many producers to send down their supplies, because at current quotations their receipts would not cover the advances made to the workers during the season. This confirms a statement made in connection with the review of the crude rubber market in the October issue of this paper.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED SEPTEMBER 2, 1913.

- N**O. 1,071,695. Tire protector. J. Brotschneider, San Francisco, Cal.
 1,071,726. Garter. F. A. Freeman, Overbrook, assignor to Pioneer Suspenders Co., of Pennsylvania.
 1,071,741. Tire armor. G. E. Hinson, Atlanta, Ga.
 1,071,880. Combined tire pressure indicator and signal. C. C. Cleveland, Boulder, Colo.
 1,071,953. Wheel tire. A. A. Picard, New York.
 1,071,998. Massage device. J. E. Gibbs, Covington, Ky.
 1,072,128. Apparel corset. D. Kops, New York.
 1,072,253. Hose mending device. J. E. Peck, Logan, W. Va.
 1,072,260. Resilient tire. F. Reed, Omaha, Neb.
 1,072,321. Head protector for babies. B. G. Fitch, Philadelphia, Pa.
 1,072,348. Vehicle wheel. W. D. Morris, assignor to The Republic Rubber Co.—both of Youngstown, Ohio.
 1,072,381. Skirt. J. Greenwald, assignor to Greenwald Bros., Inc.—both of Philadelphia, Pa.
 1,072,382. Tire. C. M. Griffin, Indianapolis, Ind., assignor to C. M. Griffin and H. G. Crawford, a copartnership.

Trade Marks.

- 63,751. Vacumit-Gesellschaft M. b. H. Vienna XIV, Austria. The word *Vacumit*. Elastic wheel tires.
 66,740. C. P. Chisholm, Oakville, Ontario, Canada. The word *Spinex*. Rubber preservatives.
 69,800. N. H. Moore, Omaha, Neb. The word *Menzalone*. A liquid preparation for treating pneumatic tires.
 70,132. P. A. Gould, Gibsonburg, Ohio. Diamond shape trade mark with name thereon. Natural gum facing dental rubber.
 70,391. J. W. Buckley Rubber Co., New York. X within a circle. Rubber tubing, hose, etc.
 71,149. The B. F. Goodrich Co., New York, and Akron, Ohio. The word *Titan*. Hard rubber battery jars.
 71,481. Hanover Vulcanite Co., New York. The words *Bull Moose* with illustration of animal's head between. Hard rubber combs, etc.
 71,664. Sidney Suspenders Co., Providence, R. I. The word *Sidd*. Belts, suspenders, etc.
 71,955. Morgan & Wright, Detroit, Mich. The word *Nobby*. Rubber vehicle tires.

ISSUED SEPTEMBER 9, 1913.

- 1,072,464. Tire protector. S. S. Huffman and D. A. Huffman, Youngstown, Ohio.
 1,072,467. Syringe. O. James, Fall River, Mass.
 1,072,514. Dirigible balloon. J. Schutte, Danzig, Germany.
 1,072,579. Antiskidding device for vehicle tires. C. W. Cramer, Scranton, Pa.
 1,072,597. Vehicle wheel. G. J. Garrett and H. C. Garrett, Richmond, Ind.
 1,072,605. Resilient vehicle wheel. H. S. Grace, San Francisco, Cal.
 1,072,607. Pneumatic cleaning implement. S. L. Guthorn, assignor to Vacuum Engineering Co., New York.
 1,072,699. Resilient vehicle tire. J. T. Clark, Provo, Utah.
 1,072,700. Resilient vehicle tire. J. T. Clark, Provo, Utah.
 1,072,705. Apparatus for impregnating and coating materials. L. D. Destribats, Trenton, N. J.
 1,072,793. Tire for the wheels of road vehicles. A. W. Torkington, London, England.
 1,072,872. Hose supporter. A. Rockowitz, New York.
 1,072,907. Automobile tire inflating mechanism. L. L. Brooks, Falls City, Ohio.
 1,072,909. Tire support. L. E. Cadwell, New York.
 1,072,925. Tire. O. Dimmitt, Green Castle, Mo.
 1,072,979. Vehicle wheel. F. O'Neill, Toledo, Ohio.
 1,072,988. Toy catapult. F. W. Pratt, Ambridge, and B. J. Dickinson, Fair Oaks, Pa.
 1,073,040. Vehicle wheel. J. Guerrero, Paris, France.
 1,073,049. Vehicle wheel. C. G. Johanson, Dorchester, Mass., assignor to Jennie W. Gooding, Providence, R. I.

Design.

- 44,640. Tire. J. E. Lee, Conshohocken, Pa.

Trade Marks.

- 70,497. L. A. Subers, Cleveland, Ohio. The word *Subers*. Hose pipes, inner tubes, etc.
 71,594. J. W. Buckley Rubber Co., New York. The word *Dumol*. Rubber hose, packing, etc.
 71,696. Tower Mfg. & Novelty Co., New York. The word *Pearl*. Rubber bands.

ISSUED SEPTEMBER 16, 1913.

- 1,073,111. Toy. E. J. Fraenkell, New York.
 1,073,116. Caoutchouc substance and process of making same. C. Harries, Kiel, Germany.
 1,073,118. Tire protector. R. V. Hastings, Chicago, Ill.
 1,073,152. Fire hose rack. W. McClintock, New York.
 1,073,177. Pneumatic wheel. S. W. Scott, Troy, N. Y.

- 1,073,249. Vaginal syringe. I. W. Kurtz and J. W. Rankin, Peru, Ind.
 1,073,329. Tire or tube for wheeled vehicles. O. T. Bugg, Hoboken, N. J.
 1,073,368. Spring wheel. E. D. Smith, Elizabeth, N. J.
 1,073,446. Artislubbing device for vehicle wheels. W. H. Snyder, Ashbourne, Pa.
 1,073,498. Elastic wheel. K. Koszegi, Baja, Austria-Hungary.
 1,073,506. Demountable rim. A. McPherson, Beaumont, Tex.
 1,073,508. Shock absorbing wheel for vehicles. C. E. Moser, Boulogne-sur-Seine, France.
 1,073,527. Substitute for rubber. J. B. Scammell, assignor to Rubber Substitute (1910), Ltd.—both of London, England.
 1,073,533. Hose clamp. M. W. Shipp, Wilkes-Barre, Pa.

Trade Marks.

- 57,721. Atlantic Insulated Wire & Cable Co., Jersey City, N. J., and Stamford, Conn. The words *Neptune* and *Atlantic* in black rimmed circle. Insulated wire.

ISSUED SEPTEMBER 23, 1913.

- 1,073,850. Hose coupling. G. T. Freer, Roanoke, Va.
 1,073,858. Reinforcing seams of waterproof garments. S. Kaufman, Philadelphia, Pa.
 1,073,963. Nozzle. J. H. Vottle, New York.
 1,073,993. Drawing roll. E. Kempshall, New York, assignor to Kempshall Supply Co., of Jersey City.
 1,074,031. Airship. I. Allen, Dansville, N. Y.
 1,074,064. Resilient wheel. J. Pronovost and H. S. Miller, Helena, Mont.
 1,074,079. Automobile tire trunk. A. Zieve and H. Davidovitz, New York.

Trade Marks.

- 61,886. Felten & Guillaume Carlswerk Actien-Gesellschaft, Mulheim-on-the-Rhine, Germany. The word *Neptune*. Tires composed of india-rubber, gutta-percha, etc.
 61,888. Felten & Guillaume Carlswerk Actien-Gesellschaft, Mulheim-on-the-Rhine, Germany. The word *Neptune*. India rubber, gutta-percha, balata, etc.
 70,396. J. W. Buckley Rubber Co., New York. The initial *B* in star. Rubber tubing, hose, etc.
 71,004. The Mechanical Rubber Co., Jersey City, N. J., New York, and Cleveland, Ohio. The word *Cable*. Hose compounded of rubber and rubber combined with fabric.
 71,040. J. W. Buckley Rubber Co., New York. The word *Octo*. Rubber hose, packing, jar rings, etc.
 71,374. J. W. Buckley Rubber Co., New York. The word *Rud*. Rubber hose, packing, jar rings, etc.
 72,069. J. M. Munyon, Jr., New York. The word *Lasto*. A preservation of rubber products.

ISSUED SEPTEMBER 30, 1913.

- 1,074,147. Supporter. W. B. Whitlock, Richmond, Va.
 1,074,206. Milking apparatus. G. V. Roberts, Jr., Port Byron, N. Y.
 1,074,235. Spring wheel. R. C. Behrends, Easton, Ill.
 1,074,246. Vehicle tire. J. T. Clark, Provo, Utah.
 1,074,269. Water bottle or bag. I. F. Kepler, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
 1,074,290. Spring wheel. S. J. Poyner, Pierson, Manitoba, Canada.
 1,074,432. Caoutchouc substance. F. Hofmann, C. Coutele, K. Meisenburg, and K. Delbruck, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
 1,074,498. Garter. F. G. Eiker, Washington, D. C.

Trade Marks.

- 70,045. J. A. Posey, Waxahachie, Tex. Red star in circle through line. A puncture proof composition.
 71,318. J. H. Meyer & Co., New York. Illustration of duckling on turtle's back in spotted circle. Waterproof fabrics.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

*Denotes Patents for American Inventions.

- [ABSTRACTED IN THE ILLUSTRATED GUMMERS JOURNAL, SEPTEMBER 3, 1913.]
 11,006 (1912). Air tubes and chambers for tires. J. Hayworth, Ivydene, Manchester Road, West Houghton, Bolton.
 11,093 (1912). Mud guards for motor and other vehicles. F. E. Cooper and A. J. Cooper, 47 Featherstone street, London.
 11,233 (1912). Apparatus for detecting and closing punctures in tires. E. W. A. Martin, 65 Holborn Road, Plumstead, London.
 11,266 (1912). Rubber pad for preventing rattling of doors, windows, etc. A. G. Spencer, 77 Cannon street, London.
 11,274 (1912). Treating india-rubber. S. C. Davidson, Sirocco Engineering Works, Belfast, Ireland.
 11,310 (1912). Means of attaching tires to rims. J. Garbutt, Skelton, near York.
 11,406 (1912). Insulating composition. F. E. Ellis, E. R. and J. P. O'Neill, 28 Piccadilly street, Tunstall, Stoke-on-Trent.
 11,470 (1912). Coagulating latex. S. C. Davidson, Sirocco Engineering Works, Belfast, Ireland.

- 11,499 (1912). Belts and bands. C. H. Gray, India Rubber, Gutta Percha, etc., Rubber Works Co., Silvertown, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 10, 1913.]

- 11,694 (1912). Solid elastic tire for spring wheels. G. H. Robinson, 144 Queens Road, Rayswater, London.
- 11,743 (1912). Balloon fabrics, etc. B. D. Porritt, and North British Rubber Co., Castle Mills, Fountain Bridge, Edinburgh, Scotland.
- 11,793 (1912). Spring wheels with resilient suspension ring. J. B. T. C. Couinaud, 45 Rue Traversière, Bordeaux, France.
- *11,914 (1912). Apparatus for aerating liquids. A. L. Koenig and H. Stahl, 715 Van Ness avenue, San Francisco, Cal., U. S. A.
- 12,020 (1912). Tire inflating apparatus. M. Solomon, 58 Finsbury Pavement, London.
- *12,031 (1912). Jackets and covers for wheel tires. C. M. Wills, Empire Building, Seattle, Wash., U. S. A.
- 12,054 (1912). Rubber heel pad. G. Evans, 117 Carlton street, Toronto, Canada.
- 12,088 (1912). Resilient tread for boots. C. Lee, 8 Thursfield Road, Burnley, Lancashire.
- 12,157 (1912). Mud guards for vehicle wheels. C. Lean, 231 Strand, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 17, 1913.]

- 12,187 (1912). Taps for valves. J. Clayton, 7 Victoria avenue, and R. Taylor, Adelphi Hotel, Church street, Blackpool, Lancashire.
- 12,268 (1912). Tires with rims enclosing air tubes or chambers. C. H. Everson, 231 South Park Road, Wimbledon, London.
- *12,274 (1912). Molding wheel tires. N. W. McLeod, 207 N. 8th street, St. Louis, Mo., U. S. A.
- 12,323 (1912). Elastic suspenders for socks, etc. D. D. Walker, "The Haven," Brightwell avenue, Westcliff-on-Sea, Essex.
- 12,350 (1912). Tire valves. W. Loebinger, 133 Grosvenor Road, Highbury, London.
- *12,384 (1912). Pneumatic boot tree, etc. C. A. Bowron, 18 E. 65th street, New York, U. S. A.
- 12,423 (1912). Wheel tires. T. H. Rushton, 158 Grimsby Road, New Cleethorpes, Grimsby.
- 12,504 (1912). Tobacco pouches. J. Rothwell, Ivy Cottage, Kirklees, Tottington, near Bury, Lancashire.
- *12,543 (1912). Vulcanizing tires. N. A. Dees, 3127 Locust street, and N. W. McLeod, 207 North Eighth street, St. Louis, Mo., U. S. A.
- 12,557 (1912). Wheel tires. A. Hobson, Roseleigh, North Park Road, Roundhay, near Leeds.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 24, 1913.]

- 12,747 (1912). Wheel tires. H. Zeumer, 125 Kaiserstrasse, Karlsruhe, Bavaria.
- 12,773 (1912). Caoutchouc substances. F. E. Matthews and E. H. Strange, 7 Staple Inn, and H. J. W. Bliss, Ingram House, Stockwell, London.
- *12,792 (1912). Tire filling compositions. H. I. Manley, 2221 Troost avenue, Kansas City, Mo., U. S. A.
- *13,013 (1912). Wheel tires. A. D. Laurent, Westfield, N. J., U. S. A.
- *13,116 (1912). Woven fabrics. W. Kops, 16th street, New York, U. S. A.
- 13,181 (1912). Vehicle wheels. E. Aimond, Rue Chaptal, Paris.
- *13,211 (1912). Vehicle wheels. C. H. Schwarz, 3514 North Broad street, Philadelphia, Pa., U. S. A.
- 13,236 (1912). Wheel tires. J. F. F. W. Ure, 13 Trinity Gardens, Folkestone, Kent.
- 13,266 (1912). Wheel tires. F. Lamplough, 53 A Pall Mall, London, and W. F. L. F. Lowndes, The Bury, Chesham, Buckinghamshire.
- 13,287 (1912). Nonconducting covering. A. J. Roach-Cuming, 21 Cowcross street, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

- 454,408 (March 1, 1913). Improvements in wheels for carriages and tires intended for them. F. W. Orcht.
- 454,404 (March 1, 1913). Improvements in tires of elastic material, such as caoutchouc, vulcanite, etc. R. Rousselon.
- 454,405 (March 1, 1913). Improvements in the manufacture of elastic substances. Company known as Gummi Foreign, Ltd.
- 454,406 (March 1, 1913). Stencils' last in rubber or elastic material. J. L. B. & B. B. B.
- 455,004 (March 1, 1913). Improvements in elastic tires. A. K. Lowell.
- 455,061 (May 11, 1912). Elastic nonpneumatic tire for wheels of automobile or other vehicles. Mademoiselle Fontenoy.
- 455,142 (May 14). Improvement in revolving heels of rubber for shoes. Bovel & Grange Co.
- 455,259 (March 7, 1913). Elastic tires. P. F. Gelez.
- 455,287 (March 8). New arrangement of mud guards for wheels of automobiles and other vehicles. A. F. C. Granger.
- 455,236 (March 7). Shoe, bootlet or slipper in elastic rubber. A. Brandt.
- 455,322 (March 8). Improvement in elastic tires for vehicle wheels. F. Lamplough.
- 455,410 (March 11). Stamped buttons for rubber suction discs for dental plates. A. Pochwaldt.
- 455,434 (May 23, 1912). Soles and tips of rubber, leather and steel combined, for shoes. "Société Française du Cuir Armée."

- 455,513 (March 13, 1913). Pneumatic tire with interior ducts for cooling. G. A. J. Dessons.
- 455,541 (March 14). Sectional pneumatic tire for wheels of vehicles. P. Larouze.
- 455,654 (May 29, 1912). Tire for vehicle wheels. J. Clerget.
- 455,701 (March 19, 1913). Protector for air tubes of pneumatic tires for bicycles, motorcycles and automobiles. C. E. Emdé.
- 455,937 (March 13). Vulcanizing apparatus. L. Schuller.
- 455,938 (March 13). Antiskidding pneumatic tire. B. W. Wittenberg.
- 456,050 (March 27). Process and machine for refilling wheel tires. E. Oliver.
- 456,104 (March 29). Process of autogenous joining of caoutchouc and resulting applications. A. Pidoux and P. de Carsalade.
- 456,146 (March 20). Composition for repairing articles of rubber or rubber compositions. F. Estevé-Anglada.
- 456,245 (April 2). Mud scraper for vehicle wheels. E. J. C. Peloux.
- 456,292 (April 3). Improvements in rods for elastic tires. R. Rousselon.
- 456,273 (April 3). Arrangement for preventing the skidding of rubber wheel tires. G. Savini and P. Poggioli.
- 456,326 (April 4). Pneumatic shoe for vehicle wheels. P. Arnault and M. Arnault.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

- 263,624, Class 30e (Dec. 21, 1912). Bed pan, with yielding, close fitting edges. Dr. H. Guthmann, Schlettstad, Alsace.
- 263,628, Class 30k (July 13). Syringe for subcutaneous injections, with compressible tube as fluid container. Dr. James T. Greeley, Nashua, N. H., U. S. A.
- 263,827, Class 71a (Feb. 5, 1913). Reinforcement of rubber or similar material, for heels of shoes. Gustav Kottke, Berlin, and Richard Kottke, Berlin-Pankow.
- 263,943, Class 41a (Feb. 18). Arrangement for pressing hats in forms, by compressed air, using an inflated pressing bag of rubber. Barbaro Jerez Diaz, Madrid.
- 264,007, Class 12 (Sept. 30, 1910). Process for the production of isoprene. Badischer Anilin & Soda Fabrik, Ludwigshafen a. Rhein.
- 264,123, Class 39b (Jan. 10, 1912). Process for the production of rubber and rubber-like substances. Dr. Ivan Ostromisslensky and Gesellschaft für Fabrikation und Vertrieb von Gummiwaren "Bogatyr," Moscow.
- 264,451, Class 63e (Dec. 17). Pneumatic tire for motor vehicles and the like. William Edgar Muntz, London.
- 264,452, Class 63e (Sept. 21). Antiskid device for solid and pneumatic rubber tires. Joseph Sternegger, Rablstrasse, 39, Munich, Bavaria.
- 264,454, Class 63e (Feb. 1, 1913). Tread for pneumatic tires. Deutsche Dunlop Gummi Compagnie, A. G., Hanau on the Main.
- 264,739, Class 63d (July 27, 1912). Attachment of pneumatic tires to wooden felloes. Rudolf Rüdiger, Berlin-Steglitz, Düppelstr. 11, and Fritz Edenfeld, Berlin, Ritterstr. 31.
- 264,820, Class 39b (Jan. 10). Process for preventing stickiness or hardening of rubber-like substances, produced by the polymerization of butadien and homologous and analogous substances, with the exception of isoprene. Farbenfabriken, formerly Fried. Bayer & Co., Leverkusen, near Cologne and Elberfeld.
- 264,862, Class 63e (March 17). Air tube, with corrugated wall for pneumatic tires. John Henry Messenger, London.
- 264,863, Class 63e (July 7, 1910). Hollow rubber tire. Max Cyrus Obermann, New York.
- 264,923, Class 120 (Aug. 15, 1911). Process for producing isoprene. Supplementary to patent 257,640. Dr. Hermann Staudinger, Karlsruhe.
- 264,959, Class 39b (July 21, 1912). Process for the production of rubber and homologous and analogous substances. Farbenfabriken, formerly Friedr. Bayer & Co., Leverkusen, near Cologne and Elberfeld.
- 265,011, Class 63e (Jan. 14, 1912). Automobile tire with a woven inlay of tangentially laid up bundles of threads. Paul Regnier, Coux, Ardeche, France.
- 265,221, Class 39b (Nov. 16). Process for accelerating the vulcanization of natural or artificial rubber varieties. Farbenfabriken, formerly Fried. Bayer & Co., Leverkusen, near Cologne and Elberfeld.
- 265,325, Class 39b (Aug. 3). Process for the improvement of rubber-like substances obtained by the polymerization of butadien and homologous substances.
- 265,447, Class 39a (April 26). Process of vulcanizing the inner rubber lining of hose and other hollow bodies. Felten & Guillaume, Karlsruhe Akt.-Ges. Mülheim on the Rhine.
- 265,551, Class 39a (May 21, 1911). Coating for attaching rubber to metals. Electro-Chemical Rubber and Manufacturing Co., New Jersey.
- 265,740, Class 39a (Oct. 15, 1912). Process for the production of a firm holding coating of rubber on objects of iron or steel. F. O. Estermann, Rottweil, Württemberg.
- 265,875, Class 63e (Jan. 16, 1913). Process and arrangement for the production of treads for pneumatic tires, with fibrous inlay. Fa. Brevetti Saracco, Turin, Italy.
- 265,923, Class 39b (Feb. 29, 1912). Process for the production of formable masses from melted rubber wastes. The Bourne Rubber Co., Ltd., London.
- 265,969, Class 30e (April 9, 1913). Air cushion with filling arrangement. Dr. Fritz Vajda, Berlin, Marienstr. 23.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 257,557 (August 3, 1913). Process and apparatus for the manufacture of a solid rubber tire for the wheels of automobiles. A. Witzel and F. Federer, Ludwigsburg and Stuttgart, Germany.
- 257,606 (August 3, 1913). Process of producing erythrene, its homologues and derivatives. Farbenfabriken, formerly Friedr. Bayer & Co., Elberfeld, Germany.
- 258,208 (August 14, 1913). Process for regenerating rubber. F. Zappert, 27 Chancery Lane, London, W. C.
- 258,014 (August 14, 1913). Process of producing substances resembling rubber. Farbenfabriken, formerly Fried. Bayer & Co., Elberfeld, Germany.
- 258,104 (August 14, 1913). New arrangement of inking pad box for rubber stamps. Société anonyme des Anciens Etablissements, P. Witlam & Co., Chichy-le-Garonne, France.
- 257,999 (August 14, 1913). Process for the manufacture of pinacene, by separation from acetone. Société for the production and sale of rubber articles, Moscow, Russia.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha from the United States for the months of July and August, 1913, and for the first eight months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
July, 1913.....	\$233,401	\$106,403	\$715,438	\$1,055,242
August, 1913.....	214,788	156,705	715,736	1,087,229
January-June	1,232,254	592,942	4,434,641	6,259,837
Total, 1913.....	\$1,680,443	\$856,050	\$5,865,815	\$8,402,308
Total, 1912.....	1,650,887	850,879	5,356,274	7,858,040
Total, 1911.....	1,482,052	1,175,597	4,815,708	7,473,357
Total, 1910.....	1,431,382	1,347,749	3,798,848	6,577,979
Total, 1909.....	1,164,699	872,074	2,678,534	4,715,307

The above heading, "All Other Rubber," for the months of July and August, 1913, and the first eight months of the three calendar years, includes the following details relating to Tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
July, 1913.....	\$379,273	\$49,878	\$429,151
August, 1913.....	377,031	42,531	419,562
January-June	2,165,896	295,106	2,461,002
Total, 1913.....	\$2,922,200	\$387,515	\$3,309,715
Total, 1912.....	2,240,826	393,441	2,634,267
Total, 1911.....	1,715,322	395,745	2,111,067

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 201 West 105th street, New York.

Business manager, E. MacPhee, 344 West Forty-eighth street, New York.

Publishers, The India Rubber Publishing Co., 15 West Thirty-eighth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) E. MACPHEE, Business Manager.

Sworn and subscribed before me this 24th day of September, 1913

(Signed) HELEN HEROLD, Notary Public,
(Seal) New York County No. 1723.

New York County register 5202. Certificate filed in Kings County Register's office No. 6679. (Term expires March 30, 1915.)

RUBBER AT THE ELECTRICAL SHOW.

THE indispensability of rubber in some industries was strikingly demonstrated at the Electrical Exposition and Motor Show, held from October 15 to 25 at the Grand Central Palace, New York.

In nearly every exhibit success was dependent on perfect electrical insulation; and this, in almost every instance, was based on the use of rubber, so that while the substance was only conspicuously in evidence in a few cases, its importance was revealed by even a perfunctory inspection of the many ingenious contrivances shown.

Particularly dependent on rubber for its efficiency was the De Laval mechanical milker, made by The De Laval Separator Co., New York, and shown in operation at frequent intervals, thanks to the co-operation of a herd of beautiful Ayrshires. The device that held the cow's teats and replaced the hands of the human milker was of rubber, as was also the tubing that connected the milker with the cushion apparatus and that by which the milk was delivered into the pail.

As serving to emphasize the versatility of rubber, there was also an exceedingly compact sending and receiving outfit for a field system of wireless telegraphy in the interesting exhibit of the Signal Corps of the United States Army. Contained in a receptacle resembling in size and exterior appearance a small dress-suit case, it was not only complete and admirably executed from a mechanical point of view, but it formed a practical illustration of the value in such an apparatus of hard rubber as an insulating material and the skill with which it is utilized for this purpose.

The well equipped hospital, supplied with all the paraphernalia for surgical work, the making of radiographs and the hygienic care of patients, was a rubber triumph. In every transformation to which it is subjected by the manufacturers' treatment, uses had been found for rubber, and modern surgery seemed to owe no small share of its marvelous success to the intelligent adaptation of rubber to the wants alike of surgeon, patient and attendant.

The National Bureau of Standards, a branch of the Department of Commerce and Labor at Washington, which makes scientific tests of the tensile strength of rubber, rubber goods and fabrics entering into them, of the elasticity, resiliency, chemical properties and electric insulating efficiency of rubber, was also represented.

A full sized working model of the "fighting bridge" of a battleship was the contribution of the navy to the exposition; and the importance of India rubber as an insulating material for the delicate electrical apparatus installed on these great masses of steel possessed particular interest, even for the non-technical observer.

The electric motor vehicle was given a prominent place. Besides a demonstration track, a fireproof model garage was set up on the third floor of the building. It was fully equipped with electrical vacuum cleaners, tire pumps, car washing machines, battery charging boards and rectifiers, including a battery room and repair shop fitted out with the latest electrical appliances. In nearly all of these rubber plays an indispensable part, for where it is used no material has yet been found to take its place.

SAND AS AN ANTI-SKID.

A company has recently been formed in Detroit, Michigan, which has as its object the promotion of the sale of a device which will prevent automobiles from skidding, this result being attained by sprinkling sand on the rear wheels. The company is known as The Auto Sand Grip Co., and the officers are: J. F. Williams, president; P. G. Sanderson, vice-president; C. B. Shotwell, secretary and treasurer.

Report of the Crude Rubber Market.

WITHIN the last month, fine Pará in the London market has commenced to follow the downward movement which has been the prominent feature of plantation grades during the greater part of the year, while the fall in the latter still continues.

Continuing to the present date the table of this year's comparative London prices of Pará and plantation rubber the following results are obtained:

1913.	Upriver Fine			
	Pará	Plantation.	Difference.	
April 26	3s. 4½d.	3s. 2½d.	2 d.	
May 26	3s. 8½d.	3s. 2½d.	6 d.	
June 25	3s. 8½d.	2s. 11 d.	9¾d.	
July 26	3s. 7 d.	2s. 9½d.	9½d.	
August 27	3s. 9 d.	2s. 8 d.	1s. 1½d.	
September 25	3s. 7½d.	2s. 4 d.	1s. 3½d.	
September 27	3s. 7½d.	2s. 3½d.	1s. 4 d.	
October 4	3s. 4 d.	2s. 1½d.	1s. 2½d.	
October 11	3s. 5 d.	2s. 1½d.	1s. 3½d.	
October 18	3s. 2½d.	2s. 1 d.	1s. 1½d.	
October 27	3s. 1½d.	2s. 2 d.	11½d.	

Starting at the end of April on the basis of 3s. 4½d. fine Pará on August 27 reached 3s. 9½d.; receding to 3s. 2½d. by the end of October.

Plantation first latex, which stood in April at 3s. 2½d., has since persistently dropped, reaching on October 27 the price of 2s. 2d. These two standards have thus within the last six months fallen respectively about 8 per cent. and 30 per cent. These figures illustrate the extent to which plantation owners have been meeting the views of buyers.

It was found impossible to repeat some purchases of plantation rubber in the London market on the basis of about 50c., which had been accepted for quantities of a certain importance early in the month.

When the market for plantation rubber gets to 50c. for first latex pale crepe, important consuming interests are prepared for new operations.

Manufacturers have only been purchasing for their immediate requirements, tho an impression has prevailed in some quarters that the market has now reached its lowest point.

A favorable symptom of the London market is that the September deliveries of plantation rubber (2,755 tons) nearly absorb the arrivals during that period of 2,910 tons; comparing very favorably with the figure of September, 1912, which amounted to 1,112 tons.

At the London auction of October 7, about 850 tons of plantation rubber were offered, of which some 400 tons were sold at an advance of about ¾d. per pound on the previous sale.

The sale of October 23 included about 1,200 tons plantation rubber, which sold well, and advanced ½d. on most grades.

A plan has been introduced with the object of raising the price of plantation rubber by a committee representing the industry, fixing each week the minimum prices at which the rubber of the combined companies will be offered during the week. The opinion has, however, been expressed that plantation rubber is produced on too large a scale to permit of any manipulation of supplies.

Of the 575 tons offered at Antwerp, September 23, only about 40 per cent was sold. The average fall was from 5 to 10 per cent. On October 22, 42 tons of Congo and 120 tons of Plantation were offered for sale.

The Rotterdam rubber sale of October 27, included about 35 tons *Hevea* and 11 tons *Ficus*. Competition was good, so that

the bulk of the quantity was readily disposed of. Prices were in proportion to London quotations.

At the Amsterdam sale of October 16, the holders had decided to meet the market and as the result about three-quarters of the quantity offered was sold.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York one year ago, one month ago, and October 30—the current date:

PARA.	Nov. 1, '12.	Oct. 1, '13.	Oct. 30, '13.
Islands, fine, new.....	99@100	71@72	66@67
Islands, fine, old			
Upriver, fine, new.....	105@106	80@82	73@74
Upriver, fine, old.....		85@86	76@80
Islands, coarse, new	54@ 55	29@30	28@29
Islands, coarse, old.....			
Upriver, coarse, new.....	83@ 84	48@49	46@47
Upriver, coarse, old			
Cametá	55@ 56	36@37	36@37
Caucho (Peruvian) ball....	82@ 83	48@49	43@44
Caucho (Peruvian) sheet...			

PLANTATION CEYLONS.

Fine smoked sheet	108@109	60@61	59@60
Fine pale crepe.....	102@103	52@ 54	53@ 54
Fine sheets and biscuits....	100@101	51@53	51@ 52

CENTRALS.

Emeralda, sausage	77@ 78	40@42	40@41
Guayaquil, strip			
Nicaragua, scrap	77@ 78	40@41	37@39
Panama			
Mexican plantation, sheet...			
Mexican, scrap	76@ 77	40@42	37@38
Mexican, slab			
Mangabeira, sheet			
Guayule	57@ 58		
Balata, sheet		66@67	63@ 64
Balata, block		45@46	44@45

AFRICAN.

Lopori, ball, prime	96@ 97	50@..	47@48
Lopori, strip, prime.....			
Aruwimi	87@ 88	40@42	37@38
Upper Congo, ball red....		45@46	45@46
Hkelumba			
Sierra Leone, 1st quality...		45@46	45@46
Mossai, red	95@ 96		
Soudan Niggers			
Cameroon, ball		35@40	33@40
Benagala			
Madagascar, pinky			
Accra, flake	25@ 26		20@22

EAST INDIAN

Assam			
Pontianak	65@66	6@61	6@61
Borneo			

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During October the conditions regarding commercial paper in the rubber line have been about the same as in September, the demand continuing rather light and at full rates, 5¾@6 per cent. for the best rubber names and 6¼@6½ per cent. for those not so well known."

NEW YORK PRICES FOR SEPTEMBER (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	\$0.80 @ 0.90	\$1.10 @ 1.22	\$1.13 @ 1.20
Upriver, coarse .....	.48 @ .52	.87 @ .95	.94 @ .99
Islands, fine .....	.71 @ .77	1.07 @ 1.13	1.06 @ 1.12
Islands, coarse .....	.28 @ .31	.55 @ .59	.62 @ .64
Cametá .....	.36 @ .39	.61 @ .67	.66 @ .68

Statistics Para India Rubber (in Tons) Including Caucho.

STATISTICS FOR THE MONTH OF SEPTEMBER

	1913.	1912.	1911.	1910.
	Para. Caucho. Tons.	Tons.	Tons.	Tons.
Receipts at Para.....	2,440	440 = 2,880	against 2,620	2,640 1,980
Shipments to Liverpool..	850	160 = 1,010	" 1,260	930 680
Shipments to Continental Ports	270	60 = 330	" 100	100 210
Shipments to America...	1,120	180 = 1,300	" 1,250	1,540 1,030
American Imports	980	210 = 1,190	" 1,430	1,930 1,110
American Deliveries	1,040	220 = 1,260	" 1,370	1,620 980
Liverpool Imports	580	105 = 685	" 1,643	980
Liverpool Deliveries	545	200 = 745	" 1,393	2,406 711
Continental Imports	180	20 = 200	" 260	200 190
Continental Deliveries...	180	20 = 200	" 280	200 160

VISIBLE SUPPLY—1ST OCTOBER, 1913.

	1913.	1912.	1911.	1910.
	Para. Caucho.			
Stock in England, Para, 1st hands.....	730	410	1,950	1,400
Para, 2nd hands.....	60	290	50	368
Caucho	360	290	50	702
Stock in Para, 1st hands	450	100	130	240 610
2nd hands	390	60	540	580 260
Stock in America	840	1,080	2,520	
Stock on Continent.....	110	40	240	310 380
Afloat—Europe	710	160	560	520 470
Afloat—America	330	10	440	510 360

3,590 840

Total Visible Supply, including Caucho. 4,430 3,740 6,960 4,170

CROP STATISTICS—30TH JUNE, 30TH SEPTEMBER, 1913.

	1913.	1912.	1911.	1910.
	Para. Caucho.			
Para Receipts.....	5,270 1,330	6,600 6,460	7,650 6,180	
Para Shipments to Europe.....	2,400 790	3,190 3,900	3,360 3,070	
Para Shipments to America.....	2,630 670	3,300 3,960	3,470 2,750	
England Landings, net.....	2,095	3,219	2,743	2,751
England Deliveries, net.....	2,760	3,889	5,603	2,754
America Landings, net.....	3,600	3,910	4,530	2,680
America Deliveries, net.....	3,630	3,840	4,120	2,440
Continental Imports, net.....	520	1,030	510	530
Continental Deliveries, net.....	660	1,080	580	500

POSITION—1ST OCTOBER, 1913.

Increase in Receipts during September, 1913, against September, 1912	260
Increase in Receipts—New Crop, July/September, 1913, against 1912.	140
Decrease in Deliveries—New Crop, July/September, 1913, England and Continent, against 1912.....	1,550
Decrease in Deliveries—New Crop, July/September, 1913, America, against 1912	210
Increase in Visible Supply Para Grades, against 1st October last year	690
Increase in Stock, England, September 30th, 1913, against September 30th, 1912	450

WM. WRIGHT & CO., Brokers.

London, 2nd October, 1913.

During the month 80 tons, including 30 tons Caucho, have been shipped from Europe to America.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	Oct. 30, '13.
Old rubber boots and shoes—domestic.....	8¼@ 8½
Old rubber boots and shoes—foreign.....	8 @ 8¼
Pneumatic bicycle tires	5 @ 5½
Automobile tires	8 @ 8½
Solid rubber wagon and carriage tires.....	8 @ 8½
White trimmed rubber	10 @ 10½
Heavy black rubber	4 @ 4½
Air brake hose	4½@
Garden hose	1 @ 1½

Latex and large hose	2 @ 2½
Mattings	7 @ 7½
No. 1 white auto tires.....	9 @ 9½
Foreign auto tires	7¾@ 8

WEEKLY MOVEMENT OF LONDON PRICES FOR FINI PARA 1913.

[IN SHILLINGS AND PENCE PER POUND]

January 3 1913	4 7¼	May 31	3 8
January 10	4/6½	June 6	3 9½
January 17	4 6	June 13	3/9
January 24	4/5¼	June 20	3/8¼
January 31	4/4	June 27	3/9½
February 7	4 2½	July 4	3 9½
February 14	4/3	July 11	3/9
February 21	4/0½	July 18	3 9½
February 28	4 0½	July 25	3/8
March 7	3 10½	August 1	3 8
March 14	3 11¼	August 8	3/10
March 20	3/11	August 15	3 10
March 28	3/9½	August 22	3/10
April 4	3 6¼	August 29	3/8½
April 11	3 4	September 5	3/9
April 18	3 4	September 12	3/8
April 25	3 4	September 19	3/6
May 2	3 5	September 26	3 7
May 9	3 8½	October 3	3 4
May 16	3/10	October 10	3/5
May 23	3/9		

Liverpool.

WILLIAM WRIGHT & Co. report [October 2]:

Fine Para.—Prices have generally been easier, especially for the forward positions. Supplies on spot continue small, and have commanded a considerable premium on forward rates. Owing to a strike in Manáos, available supplies will be limited, but with present rates for Plantation grades, a decline in the later positions is likely. Closing values: Spot, 3s. 6½d.; October, 3s. 4d.; October-November, 3s. 2d., and November-December, 3s. 1d.

Amsterdam

JOOSTEN & JANSSEN report [October 20]:

At the inscription sale of 16th inst., about 143 tons were offered, of which about 118 tons were sold. Demand was good, especially for second quality *Heveas*. Prices realized were about equal to those current abroad.

Rotterdam

HAVELAAR & DE VRIES report [October 21]:

The quotations in London affected the sale of 17th inst. Competition was good and nearly all the quantity offered was sold at the above valuations.

IMPORTS FROM PARA AT NEW YORK.

[By the Gregory, from Manáos and Pará.]

OCTOBER 6.—By the *Gregory*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	142,600	37,600	50,400	11,600	242,200
General Rubber Co.....	79,600	5,700	3,400	.....	88,700
Meyer & Brown	70,100	7,800	22,500	700=	101,100
Meyer & Brown	36,800	.....	2,100	6,900=	45,800
Henderson & Korn.....	95,300	8,900	6,600	7,800=	118,600
H. A. Astlett & Co.....	43,600	2,900	54,800	1,700=	103,000
Total	468,000	61,700	137,800	12,700=	619,200

OCTOBER 15.—By the *Benedict*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	102,300	12,400	43,200	8,200=	166,100
Meyer & Brown.....	4,200	1,600	11,300	.....	17,100
G. Amsinck & Co.....	5,700	.....	5,300	1,100=	12,100
Henderson & Korn.....	141,000	19,100	75,700	44,100=	279,900
H. A. Astlett & Co.....	31,300	28,600	35,500	27,000=	122,400
Total	284,500	61,700	171,000	80,400=	597,600

PARA RUBBER VIA EUROPE.

SEPTEMBER 26.—By the *Mauretania*=Liverpool:
Henderson & Korn (Fine)..... 11,200

SEPTEMBER 26.—By the *Pretoria*=Hamburg:
Rubber & Guayule Agency, Inc. (Fine). 13,000

SEPTEMBER 27.—By the *Baltic*=Liverpool:
Arnold & Zeiss (Fine)..... 22,500

SEPTEMBER 27.—By the *Kaiserin Auguste Victoria*=Hamburg:
Meyer & Brown (Caucho)..... 92,000
Henderson & Korn (Caucho)..... 11,200 103,200

OCTOBER 4.—By the *Campania*=Liverpool:
Arnold & Zeiss (Fine)..... 16,000
Raw Products Co. (Fine)..... 11,200 27,200

OCTOBER 4.—By the *Panama*=Colon:
F. Rosenstein & Co. (Fine).... 8,300
Ed. Maurer (Fine)..... 1,200 9,500

OCTOBER 8.—By the *President Lincoln*=Hamburg:
Ed. Maurer (Fine)..... 4,500
Rubber & Guayule Agency, Inc. (Fine)..... 6,500
Henderson & Korn (Caucho Ball) 67,000 78,000

OCTOBER 11.—By the *Mayaro*=Ciudad Bolivar:
General Export & Commission Co. (Fine) 2,500
General Export & Commission Co. (Caucho) 2,500 5,000

OCTOBER 11.—By the *Celtic*=Liverpool:
Arnold & Zeiss (Fine)..... 22,500

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

SEPTEMBER 27.—By the *Monterey*=Mexico:
G. Amsinck & Co..... 800

SEPTEMBER 9.—By the *Adriatic*=Colon:
G. Amsinck & Co..... 4,500
American Trading Co..... 2,300
Andean Trading Co..... 3,000
Lamm & Kemp 1,800
Pottberg, Ebeling & Co..... 2,600
A. de Leon & Co..... 1,200
H. W. Peabody & Co..... 600 16,000

SEPTEMBER 9.—By the *London*=Colon:
Broedermann & Litzrodt..... 700
A. Rosenthal & Sons..... 3,000 3,700

SEPTEMBER 27.—By the *Kaiserin Auguste Victoria*=Hamburg:
Ed. Maurer *18,000

SEPTEMBER 29.—By the *Pastores*=Port Limon:
Isaac Brandon & Bros..... 600

SEPTEMBER 30.—By the *Colo*=Colon:
W. R. Grace & Co..... 8,000
Various 4,500 12,500

SEPTEMBER 30.—By the *Sigismund*=Mexico:
G. Amsinck & Co..... 3,500
Harburger & Stack..... 1,500
W. Loazia & Co..... 800 5,800

SEPTEMBER 30.—By the *London*=Hamburg:
J. H. Rosbach Bros. & Co..... 35,000

OCTOBER 1.—By the *President Grant*=Hamburg:
Ed. Maurer *18,000

OCTOBER 2.—By the *Camaguey*=Mexico:

American Trading Co..... 1,000
G. Amsinck & Co..... 2,500 3,500

OCTOBER 3.—By the *Mettapan*=Cartagena:

R. del Castillo & Co..... 500

OCTOBER 3.—By the *Sarnia*=Frontera:

E. Steiger & Co..... 5,000

OCTOBER 4.—By the *Mano*=Mexico:

Hermann Kluge 7,000
Harburger & Stack..... 1,500
Maldonado & Co..... 300
E. Steiger & Co..... 200
American Trading Co..... 300 8,600

OCTOBER 4.—By the *Panama*=Colon:

G. Amsinck & Co..... 8,000
L. Johnson & Co..... 3,400
Piza, Nephews & Co..... 1,600
Isaac Brandon & Bros..... 400
Pablo Calvert & Co..... 300
Various 4,600 18,300

OCTOBER 6.—By the *New York*=Southampton:

Arnold & Zeiss 67,000

OCTOBER 7.—By the *Albion*=Colombia:

Kunhardt & Co..... 3,000

OCTOBER 7.—By the *Comus*=New Orleans:

Various 7,000

OCTOBER 7.—By the *Pennsylvania*=Mexico:

G. Amsinck & Co..... 600
Wessels, Kulenkampff & Co.... 500 1,100

OCTOBER 8.—By the *Danube*=Colon:

Wessels, Kulenkampff & Co.... 300
G. Amsinck & Co..... 200 500

OCTOBER 8.—By the *President Lincoln*=Hamburg:
Ed. Maurer *13,500

OCTOBER 9.—By the *Prince August Wilhelm*=Colon:

G. Amsinck & Co..... 9,500
Isaac Brandon & Bros..... 800
Suzarte & Whitney 500 10,800

OCTOBER 10.—By the *Alliance*=Colon:

Laurence Johnson & Co..... 2,000
Piza, Nephews & Co..... 400
Various 600 3,000

OCTOBER 11.—By the *Esperanza*=Mexico:

Young & Glenn 1,500
Harburger & Stack..... 1,000
Hermann Kluge 800 3,300

OCTOBER 14.—By the *Surinam*=Colombia:

West Coast Rubber Co..... 1,600
A. Rosenthal & Sons..... 900 2,500

OCTOBER 14.—By the *Vasari*=Bahia:

J. H. Rosbach Bros. & Co..... 56,000

OCTOBER 14.—By the *Tenadores*=Port Limon:

Isaac Brandon & Bros..... 1,000

OCTOBER 14.—By the *Vigilancia*=Mexico:

G. Amsinck & Co..... 1,000
H. Marquardt & Co..... 200 1,200

OCTOBER 14.—By the *Prinz Sigismund*=Colombia:

Kunhardt & Co..... 800
R. del Castillo & Co..... 600
Various 600 2,000

OCTOBER 15.—By the *Emil L. Boas*=Colombia:

G. Amsinck & Co..... 4,500

OCTOBER 16.—By the *Colon*=Colon:

Piza, Nephews & Co..... 1,200

OCTOBER 17.—By the *Mexico*=Mexico:

C. T. Wilson & Co..... 600
G. Amsinck & Co..... 500
Order 1,000 2,100

OCTOBER 17.—By the *Graf Waldersee*=Hamburg:

Various *37,500

AFRICAN.

Pounds.

SEPTEMBER 26.—By the *Pretoria*=Hamburg:

Arnold & Zeiss 13,500

SEPTEMBER 27.—By the *Baltic*=Liverpool:

Henderson & Korn 5,000

SEPTEMBER 27.—By the *Kaiserin Auguste Victoria*=Hamburg:

Ed. Maurer 6,000
Rubber & Guayule Agency, Inc. 5,500 11,500

SEPTEMBER 29.—By the *La Touraine*=Havre:

Arnold & Zeiss 2,500

SEPTEMBER 29.—By the *Lapland*=Antwerp:

Rubber & Guayule Agency, Inc. 5,000
Rubber Trading Co..... 7,000
Various 7,500 19,500

OCTOBER 1.—By the *President Grant*=Hamburg:

General Rubber Co..... 17,500
Ed. Maurer 5,500
Rubber & Guayule Agency, Inc. 4,500 27,500

OCTOBER 3.—By the *Adriatic*=Liverpool:

Various 10,500

OCTOBER 4.—By the *Campania*=Liverpool:

Arnold & Zeiss 17,000

OCTOBER 7.—By the *Niagara*=Havre:

Arnold & Zeiss 45,000

OCTOBER 8.—By the *President Lincoln*=Hamburg:

Ed. Maurer 15,200
General Rubber Co..... 15,000
Arnold & Zeiss 33,500
Rubber & Guayule Agency, Inc. 47,500
Henderson & Korn..... 7,000 118,200

OCTOBER 14.—By the *Rochambeau*=Havre:

Arnold & Zeiss 30,000

OCTOBER 15.—By the *Caronia*=Liverpool:

Meyer & Brown 2,500

OCTOBER 17.—By the *Kroonland*=Antwerp:

Meyer & Brown 5,000

OCTOBER 17.—By the *Graf Waldersee*=Hamburg:

Rubber & Guayule Agency, Inc. 12,000
Henderson & Korn 11,000 23,000

OCTOBER 18.—By the *Cedric*=Liverpool:

General Rubber Co..... 11,200
James T. Johnstone..... 7,000
Henderson & Korn..... 2,200 20,400

EAST INDIAN.

[*Denotes plantation rubber.]

Pounds.

SEPTEMBER 26.—By the *Pretoria*=Hamburg:

Rubber & Guayule Agency, Inc. *7,000
Various *4,000 *11,000

SEPTEMBER 27.—By the Kaiserin Augusta—Hamburg:

Meyer & Brown	*8,000
Ed. Maurer	*6,000
Rubber & Guayule Agency, Inc.	*27,200
Various	*7,800 *49,000

SEPTEMBER 29. By the Minerva—Colombo:

Meyer & Brown	*65,000
Ed. Maurer	*52,000
Various	*43,000 *160,000

SEPTEMBER 29.—By the Lapland—Antwerp:

Meyer & Brown	*290,000
Arnold & Zeiss	*6,000
Rubber Trading Co.	*7,000
Various	*3,500 *306,500

SEPTEMBER 29. By the Philadelphia—Southampton:

Meyer & Brown	*35,000
W. Stiles	*6,700
Ed. Maurer	*27,300
Robinson & Co.	*25,000 *94,000

SEPTEMBER 29. By the Minneapolis—London:

Meyer & Brown	*66,000
Ed. Maurer	*33,500
James T. Johnstone	60,000
General Rubber Co.	*78,500
L. Littlejohn & Co.	*3,500
Adolph Hirsch & Co.	*33,500
Rubber & Guayule Agency, Inc.	*22,500
C. T. Wilson	*70,000 *367,500

OCTOBER 1. By the Olympia—Southampton:

Meyer & Brown	*22,500
Ed. Maurer	*16,500
W. Stiles	*7,000
Arnold & Zeiss	*67,000
C. T. Wilson	*56,000
Raw Products Co.	*5,000
Robinson & Co.	*16,500
Various	*11,200 *201,700

OCTOBER 1.—By the President Grant—Hamburg:

Various	*3,500
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OCTOBER 3.—By the Karroo—Colombo:

Meyer & Brown	*82,000
W. R. Grace & Co.	*26,000
Ed. Maurer	*10,000
Various	*78,500 *196,500

OCTOBER 6. By the New York—Southampton:

Meyer & Brown	*29,000
Arnold & Zeiss	*7,500
Ed. Maurer	*11,200
Rubber Trading Co.	*2,200
W. Stiles	*3,000
C. T. Wilson	*16,000
A. W. Brunn	*7,000
Henderson & Korn	*45,000 *120,900

OCTOBER 6. By the Atlantic—Antwerp:

Meyer & Brown	*110,000
Ed. Maurer	*90,000
Malaysian Rubber Co.	*45,000
W. R. Grace & Co.	*11,200
James T. Johnstone	*5,500
Various	*37,300 *390,500

OCTOBER 7. By the Ryndam—Amsterdam:

Meyer & Brown	*112,000
James T. Johnstone	*17,500
Adolph Hirsch & Co.	*13,500
Ed. Maurer	*7,500
Robinson & Co.	*2,000
Various	*14,500 *250,000

OCTOBER 7. By the Haifa—Hamburg:

Michelin Tire Co.	*25,000
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OCTOBER 7.—By the Ryndam—Amsterdam:

Meyer & Brown	*10,000
Rubber Trading Co.	*22,500
Arnold & Zeiss	*13,500
Manhattan Rubber Mfg. Co.	*3,500
Various	*22,500 *72,000

OCTOBER 8. By the President Grant—Hamburg:

Ed. Maurer	*15,500
Rubber & Guayule Agency, Inc.	*4,500
Henderson & Korn	*9,500 *29,500

OCTOBER 9.—By the Majestic—Southampton:

Meyer & Brown	*12,000
W. Stiles	*8,500
C. T. Wilson	*35,000
Ed. Maurer	*11,200
Arnold & Zeiss	*35,000
Robinson & Co.	*16,000
W. R. Grace & Co.	*22,500
Henderson & Korn	*3,500 *143,700

OCTOBER 11. By the Cuba—Liverpool:

General Rubber Co.	*100,000
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OCTOBER 14.—By the St. Paul—Southampton:

Meyer & Brown	*18,000
W. Stiles	*7,500
Robinson & Co.	*7,500
James T. Johnstone	*9,000
Arnold & Zeiss	*33,500 *75,500

OCTOBER 14.—By the Solfels—Colombo:

Meyer & Brown	*70,000
W. R. Grace & Co.	*80,000
Ed. Maurer	*3,500
H. W. Peabody & Co.	*2,200
Various	*50,000 *205,700

OCTOBER 14. By the Minnewaska—London:

General Rubber Co.	*101,000
James T. Johnstone	*60,000
C. T. Wilson	*170,000
Rubber Trading Co.	*7,000
Henderson & Korn	*4,500
Ed. Maurer	*4,500
Various	*22,500 *469,500

OCTOBER 16.—By the Oceanic—Southampton:

Meyer & Brown	*26,000
Arnold & Zeiss	*7,000
C. T. Wilson	*9,000
Ed. Maurer	*8,500
Henderson & Korn	*30,000 *80,500

OCTOBER 16. By the Kroonland—Antwerp:

W. R. Grace & Co.	*11,200
Arnold & Zeiss	*78,500
Rubber Trading Co.	*2,200 *106,900

OCTOBER 17.—By the Graf Waldersee—Hamburg:

Rubber & Guayule Agency, Inc.	*4,500
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BOSTON ARRIVALS.

IMPORTS IN SEPTEMBER, 1913.

	Pounds.	Value.
Gutta-jelutong (Pontianak)	555,179	\$30,403
Gutta-percha	45,515	5,852
India-rubber	10,050	5,947

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK, SEPTEMBER, 1913.

	Pounds.	Value.
India-rubber	10,109,090	6,080,691
Raw rubber	189,388	100,362
Guayule	15,323	6,965
Gutta-percha	16,392	10,273
Gutta-jelutong (Pontianak) ..	1,269,494	62,379
Total	11,599,587	6,261,670

	Pounds.	Value.
India-rubber	11,593	6,548
Bahia	9,520	6,290
Guayule	15,323	6,965
Gutta-percha	16,392	10,273
Gutta-jelutong (Pontianak) ..	1,269,494	62,379
Reclaimed rubber	3,406	9,437
Gutta-jelutong (Pontianak) ..	1,269,494	62,379
Rubber scrap, imported	1,620,870	143,513
Rubber scrap, exported	29,682	36,613

EXPORTS OF INDIA- RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS FOR SEPTEMBER, 1913 (IN KILOGRAMS).

NEW YORK.						EUROPE.					
EXPORTERS—	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Berringer & Co.	63,830	40,171	99,497	12,511	216,009	228,363	15,222	76,665	26,347	346,597	562,606
General Rubber Co. of Brazil.	29,703	3,654	19,504	4,563	57,424	41,699	2,176	1,187	314	45,376	102,800
J. Marques	127,192	19,281	105,864	23,401	275,738	47,600	1,190	5,610	.....	54,400	330,138
R. O. Ahlers & Co.	17,538	.....	1,032	3,425	21,995	20,601	.....	2,356	25,194	48,251	70,446
Suarez Hermanos & Co., Ltd. ....	.....	.....	.....	.....	.....	24,484	.....	2,687	15,986	43,157	43,157
Pires Teixeira & Co.	3,060	3,570	14,520	19,880	41,030	54,910	.....	4,290	.....	59,200	100,230
Sundry exporters	16,490	2,550	8,580	3,080	30,700	4,590	510	9,240	1,400	15,740	46,440
Manaos, direct	257,813	69,226	248,997	66,860	642,896	422,247	19,098	102,035	.....	524,282	1,255,617
Iquitos, direct	362,498	104,263	75,127	101,634	643,522	358,378	50,790	26,573	124,661	539,632	1,205,924
.....	714	.....	.....	14,591	15,305	103,642	5,516	20,133	43,378	172,027	187,994
Total, September, 1913.	621,025	173,489	324,124	183,085	1,301,723	884,267	75,404	150,741	237,400	347,812	2,649,535



Vol. 49.

NOVEMBER 1, 1913.

No. 2.

TABLE OF CONTENTS.

Editorials:

Is Singapore to Be the Future Rubber Market?.....	53
A Loose Piece of Legislation.....	53
Self-Interest the Best Promoter of Efficiency.....	54
What That Pneumatic Substitute Must Have.....	55
Will American Cotton Always Be Supreme?.....	55
The Persistence of Rubber.....	55
Where Ceylon Has the Advantage of Brazil.....	56
Minor Editorial.....	56
The Story of the Para Congress.....	57
<i>By Our Special Correspondent</i> <i>[With 11 Illustrations.]</i>	
Annual Report of the Intercontinental Rubber Co.....	63
Effects of Overloading Solid Rubber Tires.....	64
Rubber in the New Tariff.....	65
The Tariff on Rubber for the Past Eighty Years.....	67
World's Comparative Production of Wild and Plantation Rubber.....	67
Singapore the World's Future Rubber Market.....	68
<i>By Our Special Correspondent</i> <i>[With 2 Illustrations.]</i>	
A Circular on "Elastic Cloth" Issued in 1857.....	71
Working in a Rubber Factory.....	72
<i>By Lucy Case Gowin</i> <i>[With 2 Illustrations.]</i>	
The Rubber Trade in Akron.....	75
<i>Our Correspondent</i> <i>[With 1 Illustration.]</i>	
The Rubber Trade in Boston.....	76
<i>Our Correspondent</i>	
The Rubber Trade in Rhode Island.....	77
<i>Our Correspondent</i>	
The Rubber Trade in Chicago.....	78
<i>Our Correspondent</i>	
The Rubber Trade in San Francisco.....	79
<i>Our Correspondent</i>	
The Rubber Trade in Trenton.....	79
<i>Our Correspondent</i>	
The De Ford Nasal Somnoform Inhaler.....	80
<i>[With 1 Illustration.]</i>	
News of the American Rubber Trade.....	81
<i>[With 3 Illustrations.]</i>	
Interesting Letters from Our Readers.....	88
The Obituary Record.....	89
The Editor's Book Table.....	89
New Trade Publications.....	90
New Rubber Goods in the Market.....	91
<i>[With Illustrations.]</i>	
New Machines and Appliances.....	93
<i>[With 6 Illustrations.]</i>	
The India Rubber Trade in Great Britain.....	95
<i>By Our Regular Correspondent</i>	
Some Rubber Interests in Europe.....	96
The French Army's Vast Rubber Clothing Supplies.....	97
A French Forecast of the Rubber Situation.....	97
The Rubber Trade in Japan.....	98
<i>By Our Regular Correspondent</i>	
Rubber Plantations in Dutch Guiana.....	99
<i>By Our Regular Correspondent</i>	
A Rubber Planter Leaves West Africa for South America.....	99
Some Rubber Planting Notes.....	100
Recent Patents Relating to Rubber.....	101
<i>[United States, Great Britain, France, Germany, Belgium.]</i>	
India Rubber Goods in Commerce.....	103
Rubber at the Electrical Show.....	103
Report of the Crude Rubber Market.....	104

Antwerp.

RUBBER STATISTICS FOR SEPTEMBER

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Aug. 30. <i>kilos</i>	598,469	475,572	522,401	536,560	244,851
Arrivals in September					
Congo sorts.....	64,835	472,624	209,265	211,578	334,265
Other sorts.....	6,317	21,610	24,370	17,333	58,815
Plantation sorts.....	188,229	144,736	72,778	42,131	15,389
Aggregating.....	852,850	1,114,542	828,814	807,602	653,320
Sales in September...	397,730	406,415	393,269	226,694	255,866
Stocks, September 30.	455,120	708,127	435,545	580,908	397,454
Arrivals since Jan. 1:					
Congo sorts.....	2,105,816	2,449,414	2,350,081	2,350,698	2,659,293
Other sorts.....	110,857	117,338	343,019	262,114	718,936
Plantation sorts.....	1,506,244	982,078	493,527	416,583	192,924
Aggregating.....	3,722,937	3,548,830	3,186,627	3,029,395	3,571,153
Sales since Jan. 1....	3,778,857	3,515,241	3,339,394	2,989,997	3,769,434

RUBBER ARRIVALS FROM THE CONGO.

OCTOBER 8.—By the steamer *Elisabethville*:

Binage & Co. (Comp. Commercial Congolais)	1,600
do (Comp. Commercial Congolais)	6,800
do (Belgika)	1,400
do (Grands Lacs)	1,000
do (Forminière)	375
Société Coloniale Anversoise (Lomami)	1,310
do (Comminière)	312
do (Kasai)	109,075
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde S. A.) (Combi)	15,300
do (Creveld)	4,900
Charles Dethier (American Congo Co.)	7,000
	149,072

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER

(From January 1 to August 18, 1913. Compiled by the Ceylon Chamber of Commerce.)

	1912.	1913.
To Great Britain..... <i>pounds</i>	4,797,015	9,137,151
To United States.....	2,677,659	4,599,106
To Belgium.....	759,068	2,605,466
To Australia.....	138,874	371,789
To Germany.....	125,942	176,626
To Austria.....	45,693	29,335
To Japan.....	21,139	175,349
To Canada.....	16,065	.....
To Italy.....	5,909	38,828
To Russia.....	2,288	.....
To Holland.....	2,282	992
To France.....	2,017	4,482
To India.....	100	881
To Norway and Sweden.....	39	.....
To Straits Settlements.....	.....	48,343

Total..... 8,594,090 17,188,348
(Same period, 1911, 3,925,935; same, 1910, 2,001,719.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 1,520,352 lbs. to 1,162,580 lbs. from the Straits, and 357,772 lbs. from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

	Singapore.	Penang.	Port Swet-	
	Sept. 10.	July 31.	Sept. 15.	Total.
To Great Britain... <i>pounds</i>	12,902,863	7,849,600	16,833,426	37,585,889
Continent.....	156,412	56,400	2,148,732	2,361,544
Japan.....	641,039	.....	.....	641,039
Ceylon.....	17,981	144,800	964,330	1,127,111
United States.....	4,031,152	171,733	.....	4,202,885
Australia.....	56,825	.....	.....	56,825
Total 1913.....	17,806,272	8,222,533	19,946,488	45,975,293
Total, 1912.....	9,296,381	4,798,834	14,057,852	28,153,067
Total, 1911.....	4,231,682	2,577,465	7,818,674	14,627,831
Total, 1910.....	2,499,332	1,270,571	6,886,394	10,656,297

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MARK IS STAMPED ON
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1889

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Edited by HENRY C. PEARSON—Offices, No. 15 West 38th Street, NEW YORK.

Vol. XLIX. No. 3.

DECEMBER 1, 1913.

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 The Merchants Rubber Co., Limited, Berlin, Ont.
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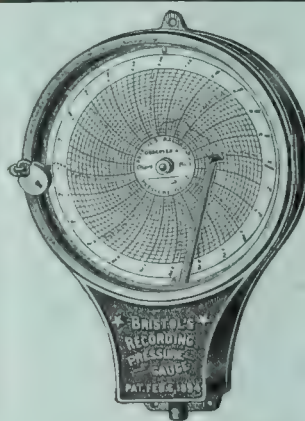
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TABLE OF CONTENTS ON LAST PAGE OF READING.

THE RUBBER TRADE'S DEBT TO GUAYULE.

IT is safe to say that every reader of this publication will be interested in the account which appears in this issue of William Appleton Lawrence, the man whose efforts more than those of any other man gave guayule to the rubber industry. It was known for sixty years before Mr. Lawrence began his experiments that the guayule shrub of northern Mexico contained rubber, but no one had been able to discover how to get it out. Mr. Lawrence thought, as others had thought before him, that the extraction must be effected chemically; but he finally discovered that the process was much simpler—that it was merely one of rubbing and water. In 1905—four years after he began his experiments—he arrived at the proper solution, and guayule extraction began to assume commercial dimensions.

In 1906 the first considerable exports were made from Mexico, amounting to a little over 5,000,000 pounds. The volume of these exports increased rapidly until 1910, when they reached over 28,000,000 pounds. But in the following year those Mexican disturbances which have lately given the American dailies so much material for scare heads, and are supposed to be giving the Washing-

ton administration many sleepless nights, broke out, and since that time the exports of guayule—along with all other Mexican enterprises—have languished, for the present year amounting only to a little over 5,000,000 pounds, and practically having ceased early in May.

Since 1906 the world's rubber supply has been increased by over 128,000,000 pounds of guayule. To get some idea of this vast contribution, it is only necessary to compare it with the plantation output which, up to the end of 1912, had reached only 2,000,000 pounds more than this figure, while as compared with the product of the Amazon, it exceeds by 33,000,000 pounds the record figure made by Pará and Manáos combined in 1912 of 95,000,000 pounds. Old Dean Swift used to remark that that man was a true benefactor of the race who made two blades of grass grow where only one had grown before. What shall we say of the men who have contributed to the world's supply of rubber nearly 130,000,000 pounds where there was none before, and who have got all this from a despised and neglected weed?

RUBBER SCRAP TOO HIGH.

TIME was when scrap rubber—old shoes, for example—was sold to the reclaimers at two and three cents a pound. It is possible that, considering the present high cost of living and of labor, it could not be supplied by the scrap men at that price today. The market for scrap, however, depends upon the state of the crude rubber market. High-priced crude has always meant high-priced scrap. Low-priced rubber has always—that is, up to the present—meant a corresponding fall in the price of scrap. For a long time crude rubber has been steadily falling. Nor with the great increase of plantation rubber is there much likelihood of any appreciable advance. Yet old shoes are held at eight cents and better. At that price crude rubber, compounded, is better and cheaper, and that is what the manufacturers are using. The reclaimers admit that scrap is too high, that they cannot quote lower prices until it drops—and still it holds up. It is hard luck for the big collectors, who stand to lose, but it is folly to try to smash the law of supply and demand, and it is that law that they are up against.

As throwing an interesting light on the relative movements of Pará and scrap prices, and particularly as showing that while the price of Pará has greatly declined in the last four years, shoe scrap prices have remained practically the same, a table is given below showing a com-

parison of Para and scrap prices for every year since 1895:

	PRICE OF FINE PARA RUBBER.		PRICE OF SHOE SCRAP.	
	Low.	High.	Low. cents.	High. cents.
1895.....	\$0.70	\$0.815	4.25	5.25
1896.....	.71	.85	3.50	5.25
1897.....	.795	.89	4.00	5.17
1898.....	.82	1.06	4.375	6.375
1899.....	.91	1.10	5.175	11.00
1900.....	.83	1.115	6.25	11.00
1901.....	.76	.95	6.50	9.25
1902.....	.66	.92	6.625	8.25
1903.....	.78	1.13	6.625	8.00
1904.....	.89	1.32	5.25	6.95
1905.....	1.13	1.35	5.70	9.375
1906.....	1.16	1.28	5.75	10.30
1907.....	.69	1.24	10.00	13.20
1908.....	.65	1.30	5.00	9.00
1909.....	1.13	2.15	8.25	10.875
1910.....	1.16	2.90	9.25	10.625
1911.....	.90	1.67	8.75	10.125
1912.....	.93	1.22	8.90	10.00
1913.....	.73	1.12	8.00	10.875

TAKING THE MEASURE OF THE LAST THIRTY YEARS.

THE National Civic Federation, a body of distinguished and disinterested citizens banded together for the general welfare, has embarked on an undertaking of great importance and of stupendous proportions. It plans to take such a comprehensive survey of the country as to enable it to show just what progress has been made in the past three decades in the material, mental and moral condition of the American people—to see if men, women and children are better off today than they were thirty years ago. This is a totally different matter from compiling statistics of the national wealth, the volume of manufactures, extent of exports and imports and increase in bank deposits. These figures are very readily obtained. The present inquiry is to determine if the average man—the average merchant, manufacturer, farmer, carpenter, clerk, teacher, hod-carrier—is getting more out of life than he did a generation ago. And the comparison is made with three decades ago because it is during this period that there has been such a tremendous output of effort by executives, legislatures, political parties, charitable organizations, the press, the pulpit and private philanthropists, to correct the faults, real or imagined, of former days. Socialism, semi-socialism and varying degrees of radicalism have all been busy in changing the old settled order of things. What has been accomplished? It is a gigantic question. If the National Civic Federation can answer it the world will be its debtor.

WISELY AWAITING THE RESULT OF THE TARIFF.

A RUBBER manufacturing company in New Jersey, mentioned in our news columns, some time ago planned to expand its plant by the addition of a tire department, but when the tariff as finally passed still retained the low duty of 10 per cent. on tires, the directors concluded to postpone their entry into the tire field. This was commendable wisdom. Doubtless in time—possibly in the near future—there will be room for more tire factories in the United States, but just at present the tire producing capacity of this country is rather in excess of the tire consuming capacity, and a drop in the duty on foreign importations from 35 per cent. to 10 per cent. will without doubt tempt quite a number of the foreign makers to enter the field. Possibly their entrance into the American market may not be appreciably felt, and again it may—that remains to be seen. Under present conditions, it is certainly the part of discretion for new aspirants after tire business to wait and see how the game is progressing before plunging in.

THE TRANSPORTATION TAX ON THE RUBBER MANUFACTURER.

AN article entitled "The Rubber Manufacturer's Transportation Burden," which is full of interesting figures, will be found on another page of this issue. It contains some statements almost startling, but it was prepared for this publication by a writer of exceptional accuracy. Doubtless it will amaze many manufacturers to learn that, with all the vast transportation equipment of the country today, it costs as much to ship goods from the New England seaboard by rail direct to the nearer points of the middle west as it did seventy years ago when such shipments were made by way of New Orleans and up the Mississippi and Ohio rivers. The exorbitant railroad charges for short hauls are brought out in bold relief by the experience cited in this article of an exporter who filled an order for mechanical rubber goods from the Russian government. His freight bill on the goods from the factory to New York, a distance of 50 miles, was more than he was charged on the same goods from New York to a port in Germany 3,250 miles distant.

The auto truck, which, within reasonable distance, enables every manufacturer to control his own transportation, will undoubtedly compel the railroads to treat the short-haul traffic with much more consideration than has heretofore been the case; for in this particular field each road, generally speaking, has enjoyed a monopoly and exercised it to the limit.

WHY LEATHER SHOES?

HERE is another axiom to be added to the collection of the ages: A man's civilization is in inverse ratio to the amount of skin (or leather) clothing he wears.

Now see if that isn't so. The aborigine envelops himself in skins. That is quite natural. As long as he is in pursuit of game for the purpose of dining on its carcass, why not utilize its skin for clothing? As he progresses on the upward scale he learns the art of tanning and converts the skin into leather. As he becomes more civilized he substitutes garments of wool and cotton but still clings to skin caps and leather boots. When he yields to primitive impulses and goes on the hunt he puts on a leather jacket; and when he turns cowboy and rounds up the wild steers on the western plains he encases himself in leather breeches. But as he gets further and further away from savagery he discards all leather clothing except shoes. And why should he cling to leather shoes?

That is just what society is asking itself. Tradition dies hard. It has as much vitality as a bad habit. Men kept on wearing long-legged boots two and three generations after they had left the woods and the farms and gone into stores and offices. The leather shoe is a tradition, but it is a tradition that is getting harder knocks with each summer. The canvas shoe with rubber sole is doing it. And why shouldn't it? How much more comfortable, appropriate and sensible for summer wear is a light, cool canvas shoe with a light, buoyant rubber sole, than hot leather with stiff soles and jarring heels! The first canvas shoes manufactured were made for children, and especially for boys, and the reason of their appearance was largely one of economy. Then they were taken up, because of their suppleness and pliability, by those who engaged in athletic sports. And soon they commended themselves, by reason of their comfort, to the great body of citizens, irrespective of age and also irrespective of whether or not they ever attempted tennis or devoted their energies to golf. The canvas shoe appears earlier each spring and remains later in the fall. And why shouldn't it remain through the entire twelve months? Why seize the unoffending calf and do it to death to cover the human foot, when the cotton plant and the rubber tree can do it better?

THE ONE GREAT POSSIBILITY IN THE UTILIZATION OF RUBBER that appealed most to Charles Goodyear was its life-saving potentialities. He was inexpressibly dis-

tressed over the continuous loss of life at sea, and he applied himself day and night to devising the best sort of rubber life preserver. But rubber has recently been applied to a life-saving service that probably never occurred to Goodyear, even in the wildest flight of his imagination. Not only the medical profession, but the public at large has been greatly exercised of late over the number of fatalities from the accidental taking of bi-chloride of mercury tablets, and many people have busied themselves in the attempt to discover the best preventive. A Brooklyn doctor and a New York chemist have put their heads together and devised a rubber coating for the tablet, thick enough to withstand the acids and digestive juices of the stomach. To prove that they have succeeded in their quest the chemist recently swallowed a five-grain tablet so prepared and retained it for twenty-four hours without any injurious effects. Unless some better preventive is discovered it is quite likely that within a short time all bi-chloride of mercury tablets when sold over the counter will be equipped with a rubber coat impervious to stomachic influences.

CHICAGO HAS RECENTLY PASSED AN ORDINANCE REQUIRING that all motor trucks, and delivery wagons be fitted with fenders within ninety days from the passing of the measure. It is not taken into consideration, however, what those concerns which will be unable to obtain suitable fenders in the allotted time are to do. The motor vehicle industry has been searching for a proper fender for the past two or three years, but the ideal device for this purpose has not yet appeared. The ordinance reads as follows:

"It shall be unlawful for any person, firm or corporation to use and operate within the city of Chicago any motor car or truck for the purpose of conveying therein bundles, parcels, baggage, merchandise or other similar articles unless said car or truck is provided with a fender, as in the case of street cars operated and used within said city, of such design as may be approved by the Board of Inspectors of Public Vehicles."

It is plain to be seen that it will be physically impossible to comply with the ordinance within the allotted time, since few such devices as those required have been designed and put into actual practice. A few of those fenders and bumpers which have been brought out have embodied rubber as a part of their construction, and if the above ordinance is to be complied with there is no reason why the rubber industry should not contribute its share toward the development of a satisfactory device. But even if a suitable fender should be introduced, it would be at least a year before it could be placed on the market in quantities sufficient to supply the demand.

What the Rubber Chemists are Doing.

[Extracts from Recent Articles on the "Chemistry of Rubber," which have appeared in some of the Foreign Publications.]

IN the "Zeitschrift fuer angewandte Chemie," Volume 26, page 494, Ernest Deussen communicates a new method for "The Quantitative Determination of Sulphur in Rubber." The principle of the method is based on the fact that on heating sodium sulphate with sodium carbonate and filter paper in the presence of reducing gases, there is formed sodium sulphide. In the present application of this principle the rubber is treated with concentrated nitric acid, as a result of which a yellow nitrosit is formed which is soluble in a sodium carbonate solution. The sulphur has been for the most part oxidized to sulphuric acid. The mineral matter has been converted either to nitrates or sulphates, or in some cases has remained unaltered.

After the excess of nitric acid has been boiled off, sodium carbonate is added, which dissolves the nitrosit and neutralizes the sulphuric acid, with the formation of sodium sulphate. Those minerals which have been rendered soluble by the nitric acid treatment are precipitated as carbonates. The solution, therefore, contains only the nitrosit, sodium sulphate, and excess of sodium carbonate. This solution is filtered, evaporated to dryness, and the residue reduced with filter paper. The sodium sulphide formed is determined colorimetrically in the usual way. As a standard for this colorimetric determination there is used a sodium sulphate solution of known strength which has been evaporated and reduced under the same conditions as the sample to be analyzed. The reduction of the sodium sulphate to sulphide is not quite complete, there being formed small quantities of sodium sulphite and sodium thiosulphate. By using a sodium sulphate solution of known strength and treating it in the exact manner as the sample to be analyzed, the error incurred, owing to the incomplete reduction of the sulphate, is overcome.

The nitric acid used in the above determination must be distilled over barium hydroxide and only the middle fraction of this distillation accepted.

In the "India Rubber Journal" of October 18, 1913, H. Skellon, B. Sc., contributes a paper on "The Role of Polyprene Sulphide in Vulcanization." By polyprene sulphide the author understands the final interaction product of the rubber hydrocarbon and sulphur. Regarding the rubber hydrocarbon as $(C_{10}H_{16})_n$, polyprene sulphide would have the formula $(C_{10}H_{16}S_2)_n$. In the theoretical discussions of vulcanization this possible influence of polyprene sulphide has been disregarded. It would, of course, be most marked in the case of hard rubber where considerable polyprene sulphide is present. The author expresses the opinion, which is supported by experimental data, that sulphur is soluble in polyprene sulphide, and, furthermore, that this solubility is greater than the corresponding solubility of sulphur in rubber. Considering the reaction: Rubber + sulphur = polyprene sulphide, it is found that the initial reaction velocity is greater than the reaction velocity toward the end of the reaction. (This is ascribed to the solubility of sulphur in polyprene sulphide, which latter is formed in the reaction.) As a result, the concentration of the unchanged rubber and sulphur is altered, which would not be the case if the sulphur were not soluble in the polyprene sulphide. The fact of sulphur being more soluble in polyprene sulphide than in rubber also explains why hard rubber articles do not generally bloom, altho they contain a very large quantity of free sulphur. Blooming in soft rubber goods may be looked upon as the crystallization of sulphur from a supersaturated solution. Since sulphur is more soluble in polyprene sulphide and since hard rubber contains a much larger amount of polyprene sulphide than does soft rubber, a free sulphur concentration which would produce a supersaturated solution in the case of soft rubber goods, produces a solution which is not supersaturated in the

case of hard rubber. Accordingly, blooming does not take place, even tho a large amount of free sulphur be present.

It is probable that when sulphur dissolves in polyprene sulphide, polysulphides result, as is the case when sulphur is dissolved in inorganic sulphides. It is therefore very probable that polysulphides of polyprene sulphide exist in vulcanized rubber goods.

In the "Gummi Zeitung," Volume 27, page 1906, Felix Jacobsohn contributes a paper on "The Determination of the Mineral Matter in Rubber Compounds." It was recently suggested in Germany to use a solution method as the standard method for the determination of mineral matter in vulcanized rubber goods. Kerosene (B. P. 230 to 260 deg. C.) was suggested as a suitable solvent, tho in some cases camphor oil or paraffin oil would be found to be more effective. The author found on working with paraffin oil that results too high in mineral matter were very frequently obtained. This erroneous value, he suggests, is probably due to the carbonization of the rubber which takes place in the process of solution owing to the high boiling point of the paraffin oil. The carbonized matter being insoluble would be weighed up together with the minerals, and accordingly a value too high would be found for the latter. The same compound which gave too high a value with paraffin oil was also analyzed, using camphor oil as a solvent. In this case values much too low in mineral matter were obtained. The same held true with a mixture of $\frac{1}{4}$ of paraffin oil and $\frac{3}{4}$ of camphor oil. Satisfactory results were obtained, however, by using a mixture of $\frac{2}{5}$ paraffin oil and $\frac{3}{5}$ camphor oil. It should be noted that the above considerations all refer to the same compound which contained 33 per cent. rubber. For a rubber compound containing 50 per cent. rubber, it was found that equal portions of paraffin oil and camphor oil give the most satisfactory results.

In the "Gummi Zeitung," Volume 28, page 7, H. Loewen contributes an article under the same title as Jacobsohn's article. This investigator finds in the majority of cases that the utilization of paraffin oil as a solvent gives satisfactory results. However, in one particular case excessively high values were obtained for the mineral matter as determined by this method. It was observed during the heating of the rubber with the oil that after some of the rubber had gone into solution a peculiar flocculent substance separated out from the solution and subsequently settled together with the mineral matter. This substance was evidently rubber which had once been in solution and for some reason had subsequently become insoluble. In order to investigate this matter more closely, experiments were carried out with unvulcanized rubber. A qualitative experiment was carried out by heating 0.1 grams plantation crepe with $2\frac{1}{2}$ c. c. paraffin oil at 170 deg. C., till the rubber was completely dissolved. The solution was thereupon heated for several hours at 230 deg. C., altho by this treatment the solution was not markedly affected. On increasing the temperature, but keeping it below the boiling point of paraffin oil, brown flakes immediately separated out of the solution. The heating was therefore discontinued, and these flakes were found to be soluble in benzol, but on continuing the heat treatment they no longer were benzol soluble. By using a mixture of equal parts of paraffin oil and kerosene (B. P. 160 to 260 deg. C.), the separation of these brownish flakes was not obtained.

Jacobsohn found that paraffin oil gives too high a value and camphor oil too low a value, while certain mixtures of these two oils give satisfactory results. In view of the above observations, Loewen suggests that these apparently accurate results are merely due to the counter balancing of the positive and negative errors.

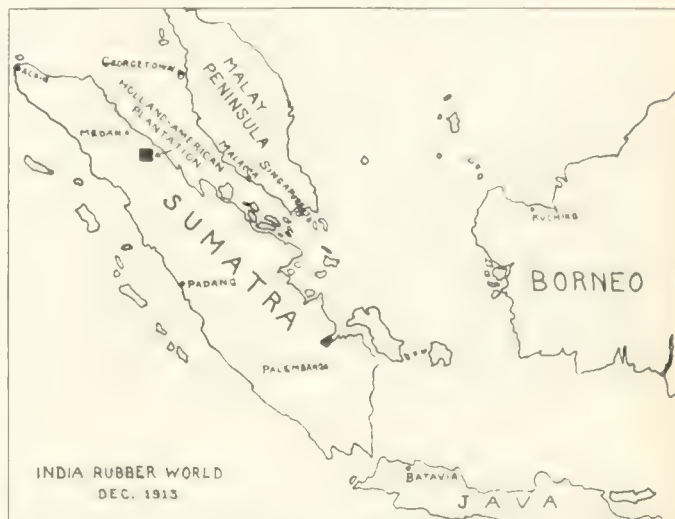
Fifty Square Miles of Rubber Trees.

THE GENERAL RUBBER COMPANY'S VAST SUMATRA PLANTATION.

IN the first photograph shown below it will be noticed that there is quite a rise of ground—one might almost call it a hill—in the foreground. If one were standing at the top of that little elevation he could see a sight impossible to duplicate anywhere else in the world. He could look down through continuous avenues of *Hevea Brasiliensis* trees for seven miles. If he were to visit that same spot four or five years from now he would undoubtedly be able to look through avenues of rubber trees twenty miles long. But that is a later story.

This view is in the center of the great rubber plantation of the Holland-American Plantation Co. of Amsterdam, a subsidiary of the General Rubber Co., of New York, which, as is known to the trade, is the company that supplies all the crude rubber to the United States Rubber Co. and in a general way is under the control of that great organization. This plantation, which comprises 85,000 acres, already has 34,000 acres of rubber trees, or over 53 square miles. The vast scope of this enterprise and the great dimensions it has already assumed have made this plantation the cynosure of the trade and focused upon it the attention of the rubber growing world. There is nothing else in existence comparable to it in size. The Malacca plantation, which is the next in acreage, has 15,000 acres planted to

facturing organization using from one-fourth to one-third of all the crude rubber coming into the United States to be at the mercy of the capricious *seringueiro* and the almost equally irresponsible



MAP OF SUMATRA
SHOWING THE LOCATION OF THE HOLLAND-AMERICAN
Plantation.

aviador. It was natural that they should ask themselves why, with their great manufacturing and distributing system, they should not extend their organization until they controlled rubber from the ground up, or, to grow alliterative, from the soil to the sale.

They concluded it was worth investigating, and they sent Mr. Edgar B. Davis—who in his private travels had visited the Middle East extensively and was already quite familiar with that part of the world—over to the Malay Peninsula and the adjacent territory to reconnoitre. Obviously this was an enterprise that required not only American gumption but the best local experts, thoroughly at home in plantation matters. Con-



VIEW TAKEN FROM HILL, FROM WHICH 12,000 PLANTED ACRES
CAN BE SEEN.

rubber and has hitherto been looked upon as a probable record maker for many years. But that is already a distant second. Perhaps a clearer conception of the size of this plantation may be obtained by stating that the planted acreage is already two and a half times the size of Manhattan Island. To a New Yorker, at least, that is very convincing, as the true Manhattanite believes that there are very few things in the world larger than his island. Or to put it in another form, if the 4,000,000 trees now on the estate were planted in a row, 19 feet apart—the shortest distance between any two trees in the plantation—they would reach 14,000 miles, or farther than from New York to Sumatra. And all this great enterprise is the result of less than four years' work.

It will be remembered that in the spring of 1910 the price of crude rubber soared to the three dollar mark, but for eighteen months before that time it had been climbing with a rapidity most inauspicious for the manufacturer. It was most natural, therefore, that the directors of the United States Rubber Co. should ask themselves why it was necessary for a great manu-



JUNGLE BEHIND CEMENT

sequently there were associated with Mr. Davis two of the most eminent authorities on plantation matters in the Middle East, Mr. W. J. Gallagher, Director of Agriculture in the Federated Malay States, who had devoted several years to the

most minute inspection of the possibilities of the Malay Peninsula, and also Mr. H. Ketner, a native of Holland, who had had twenty-two years' experience in rubber planting. These



MONARCH STUMP PULLER IN OPERATION

two men, familiar with the conditions necessary for successful plantation enterprises, together with Mr. Davis, spent many months in careful examination of the rubber possibilities of the Peninsula and of the various adjacent islands, and they finally selected a spot on the northeastern shore of Sumatra as offering altogether the most favorable conditions. Their selection was further investigated by a number of men qualified for the task, and their choice approved; and in May, 1910, the first purchase was made, when the company bought the Soengei Sikassim estate, owned by the New Assahan Tobacco Co. of Amsterdam. Subsequently they purchased nine more contiguous estates, until they owned in one piece—tho irregular in shape—a tract containing 133 square miles and measuring 30 miles across its greatest length and 20 miles across its greatest width. This tract is 17 miles back from the port of Tandjang Bale and 105 miles south from the city of Medan, a place of 27,000 population, where the General Rubber Co. has a branch house under the management of J. W. Bicknell, a former resident of Malden and a graduate of Harvard.

They selected this location for two reasons: It was proved to them that rubber plantations already started in that part of Sumatra were giving wonderful promise of success. In addition to that fact, the estates which they purchased had been used for tobacco and much of the land partially cleared. In fact the entire tract contained over 175 miles of well-built roads and was well drained. They could begin planting, therefore, immediately, without the delay at the start of having to clear every acre.

The planting was begun in June, 1910, only one month after the initial purchase; and the speed with which it was pushed may be inferred from the fact that in one single month 5,000 acres were planted. The plantation managers assured the directors of the home company that they should have rubber from their own plantation in five years' time, but the growth has been so rapid and healthy that the company is now assured of rubber from its own planted trees in less than four years' time. Another estate, in the Sultanate of Langkat, a little to the north of Medan, containing 2,500 acres, was acquired by the company, and rubber will be received from this estate this fall.

Mr. Davis, who is at present in New York but expecting soon to return to Sumatra, is exceedingly enthusiastic over the outlook. He believes that his company can compete with any rubber producers in the world, and he assigns various reasons. In the first place, the soil is of a volcanic, alluvial character,

perfectly adapted to rubber growing. The rainfall, which is from 70 to 100 inches a year, is distributed through the whole year, even the hot months of summer having many days of rain, so that tapping can be carried on continuously through the year.

Moreover, the labor situation is as favorable as anywhere in the rubber growing world. Labor is cheaper than in the Federated Malay States and, while not quite so cheap as in Ceylon, is said to be more efficient. There are 11,000 coolies employed on the plantation, 3,500 of them being Chinese and 7,500 Javanese; and it is believed that by reason of the economy of handling this great body of labor as a unit, under one management, it will be possible to produce rubber on this plantation at a lower figure than is possible in almost any other spot. The organization of this great army of laborers is perfect. The head manager of the entire estate, Mr. Ketner, has under him ten managers, one for each of the ten divisions of the plantation. Each manager has five or six assistants, all Europeans but who can talk in the language of the coolie, which is Malay. Each assistant has under him eight or ten captains, or "mandors" as they are called in Javanese, or "tandils" as they are called by the Chinese. These captains are placed over groups of from twenty to fifty coolies. So that there is a continuous current of responsibility, from the humblest coolie getting 16 to 20 cents a day, up to the managing head of the whole enterprise.



ONE-YEAR-OLD TREES

It may be a new thought to a good many people to learn that the topography of this estate also adds considerably to the efficiency of its management, but such, as a matter of fact, is the case. In many estates where the land is of an undulating nature, with little hills and small intervening valleys interspersed, it is very difficult to get a general survey of any large section, and for that reason it is not always possible for the manager or his assistants to discover just how industriously the coolies are keeping at their work; but in this estate the greater part of the land is either flat or on a gentle slope, and thus it is possible to get a view of vast tracts of the plantation, so that many groups of coolies can be kept under inspection by a single observer. This is a distinct advantage, which will contribute its share to low cost of production.

The managers do not rely entirely upon constant surveillance, however, to get the maximum of work out of their employes. They rely quite as much on getting and retaining the good will of the laborer. And with this end in view they are constantly looking after his welfare. They are building at the present time a hospital with accommodations for 600 patients and equipped with everything that makes for the quick recovery of

those who are its temporary inmates. Nor does their interest stop here. Everything is done to keep the laborers contented



THREE-YEAR-OLD TREES

and happy, even to the extent of supplying them with instructive and diverting amusements which they appreciate thoroughly.

One of the photographs reproduced here by way of illustrating the work of this plantation shows the coolies in the act of extracting a root of one of the jungle trees. This plantation, notwithstanding its size, is one of the cleanest and best kept in the East, the managers believing that the initial expense of pulling out stumps and roots, tho large, is warranted by the ultimate result. No serious pests and diseases have appeared, but the disease most dreaded, *Fomes semitostus*, usually finds its habitat on dead stumps and roots, and it is to obviate the possibility of losses from this fungus that the stumps and roots of old jungle trees are being removed. The trees have been planted 121 to the acre, with the view of bringing 100 trees into bearing, but so free have the plantations been of disease that the management expects to bring practically 100 per cent. of the trees into bearing. Mr. Davis contends that it is perfectly possible, through proper management, to avoid practically all these fungoid diseases.



CONSTRUCTING A ROAD IN THE PLANTATION

A little north of this tract there are a number of flourishing English and Dutch plantations ranging in age from one to seven years, many of them producing 300 pounds or more to the

acre. The Holland-American people expect easily to live up to this average and anticipate inside of the next few years an annual product from the 34,000 acres now planted of 10,000,000 pounds. There is this additional feature to be mentioned, that this vast amount of rubber, being made entirely under one management, will be uniform in quality, a condition the absence of which has hitherto greatly militated against the manufacturers' appreciation of plantation rubber. But, even with its great supplies, it is obvious that the company will have no rubber to sell, so it will be in no way a competitor of the other planting enterprises; while, on the other hand, the operations of this American plantation, conducted as they are on a scale never before attempted or even dreamed of, will be watched with the keenest interest by every planter, big and small, in the entire East—and they cannot fail to prove of the greatest value, in the lessons they will teach, to the whole rubber planting world. It is the purpose of the directors of the General Rubber Co. to co-operate fully with the planters in the East to the end that the industry may be put on a still sounder and more secure basis.

FOREIGN REGISTRATION OF AMERICAN TRADE-MARKS AND PATENTS

Vice-Consul General Clarence E. Gauss, stationed at Shanghai, China, in a report published on October 30, calls attention to the need for registration by American manufacturers of their trade-marks and patents in competing countries. He states that China has no trade-mark or patent laws, altho the government has undertaken to inaugurate such systems, adding that the difficulty in the matter of infringements does not generally arise among the Chinese, with whom the authorities are usually prompt to deal in cases of infringement, but with certain European and Oriental manufacturers who put on the Chinese market merchandise which it is claimed by representatives of American manufacturers violate American trade-mark and patent rights. It is difficult to deal with such cases for the reason that not infrequently the American manufacturer has neglected to register his trade-mark in the country where the spurious articles are manufactured.

FOREIGN TRADE OPPORTUNITIES.

A foreign business firm informs the American consulate-general at Singapore that it would like to get in touch with a reliable firm to represent it in the United States. The firm states that it is in an exceptionally favorable position as regards the rubber trade, and believes that direct buying of rubber at Singapore will effect a considerable saving to American purchasers. The number of the consular report containing this information is 11,972.

An American consul has received an inquiry for the names of manufacturers in the United States of machinery for insulating electric wire. Replies should be accompanied by description and prices, all in Spanish. Report No. 11,950.

A new golf course—the second to be laid out in Portugal—is now being built by the government of that country, at Belem, near Lisbon, and will be opened this year. The fact that none of the stores in either Lisbon or Oporto—the location of the other course—carry golf supplies, and that the supplies which are introduced with the opening of this new course will have an advantage over those that come in later as adherents of the game increase in number, suggests an opening in Portugal for manufacturers of golf balls. The Bureau of Foreign and Domestic Commerce at Washington is able to supply lists of sporting goods dealers in both of these cities.

NEW YORK COMMERCIAL CO. DIVIDEND.

A dividend of 15 per cent., payable on December 1, was declared November 19, by John J. Townsend, of 45 Cedar street, referee in the bankruptcy proceedings of the New York Commercial Co. Mr. Townsend at the same time said that another dividend of 10 per cent. would be declared soon.

Rubber Notes From Singapore.

By Our Special Correspondent.

PERHAPS in my letter of last month I did not emphasize the reasons for my belief that Singapore is to be the future world's market for Pará rubber. The economy of direct buying I think I made clear. Now as to the city as a commercial center, and particularly as a rubber center:

In the first place, it is a free port with the best of shipping facilities, warehouses, banks, etc., etc. It is also a big city—225,000 inhabitants. Further, it is in the center of the great planting districts where there are already more *Hevea* trees than in all of the rest of the world. I have asked THE INDIA RUBBER WORLD to prepare a map showing just how central it is in regard to planted rubber. Within touch of it are some 1,500,000 acres.

Singapore will undoubtedly be of the utmost importance and interest to you in the near future, because it is the natural center of the rubber planting industry in the mid-East. There are altogether some 1,500,000 acres of planted rubber out here, of which about 700,000 acres are in the Malay Peninsula, 60,000 acres in South India, 30,000 acres in Burmah, 240,000 acres in Ceylon, 208,000 acres in Sumatra, 200,000 acres in

produce of which all goes to Colombo, the natural center of all the rest, which one might call Malayan rubber—1,200,000 acres—is Singapore, and to Singapore it will shortly come, nearly all of it, for disposal in an open market, which will be of the utmost importance to the United States of America.

PLANTING IN THE PHILIPPINES.

It has been recently suggested to me by an American that I should go to the Philippines with a view of encouraging the planting industry there. This can only be done by attracting capital there from America, and I think that the only way to do this would be to go straight to headquarters in New York. I have studied and planted cocoanuts for many years, and recently private capital was raised for coconut planting in a carefully selected region in East Malaya, on a large scale, based on my estimates. I am convinced, however, that cocoanuts in the Philippines, if properly planted and administered, would do extremely well, and would bring in as much revenue in the future as rubber; *i. e.*, about 20 per cent. to 25 per cent.

Certain parts of the South Philippine Islands are very suitable



MAP SHOWING SINGAPORE'S CENTRAL POSITION IN EASTERN RUBBER PRODUCTION, PRESENT ACREAGE AND ESTIMATED YIELD FOR 1913.

Java, 60,000 acres in Borneo, and some 30,000 acres elsewhere. The Java areas are very uncertain and inaccurate, and contain many thousands of acres of odd lots—*Ficus*, *Castilloa*, *Ceara*, etc.,—which are of no earthly use here commercially. Few of the Java properties are of any value at all as rubber estates, being mainly coffee, tea, and tobacco estates, with some rubber. Outside of possibly 60,000 acres, no one considers Java seriously, as the yield of the best is none too good there, tho labor is very cheap.

Deducting the 300,000 acres in Southern India and Ceylon, the

for rubber, so that any American manufacturing company which would like to have its own plantation would do well to start there.

RUBBER PLANTING IN CENTRAL AMERICA.

I believe that a good deal of American capital has been recently put into planting projects in Central America. I would very strongly advise against this in most cases, as you have not got the abundant cheap labor that we have, averaging 20 cents gold per day, nor the labor discipline, nor the trained staffs, etc. A great deal of good money might be saved by sending really

competent men there to report and advise. There are plenty of men who have managed estates that have been paying dividends for years. I don't think that many American-owned properties in Central America have paid any yet, so I leave you to draw your own conclusions. As a matter of fact, a great many of the men you have had in charge have had no real knowledge at all of their business, not being planters.

This is a very great pity, as it will tend to discourage tropical enterprise in America. Most of the mistakes are made in the estimates of probable results. I have seen the wildest and most improbable statements made *re* some of these enterprises, and they are all systematically undercapitalized—as far as working capital goes. The costs of working are also grossly understated. There is plenty of money to be made in tropical planting, properly organized and carried out, so that it is a pity that more businesslike methods have not been employed. We have been at the game for generations here, and really know something about it, and we do not like to see our neighbors exploited in the way that you have been.

THE WATERHOUSE CO.'S NEW CONCESSION

One of the most interesting of recent developments in the Malay Peninsula is the acquisition by the Waterhouse Co., of Honolulu—of which Albert Waterhouse is the president and Fred T. P. Waterhouse the secretary—of a tract of 25,000 acres in Johore, near the River Endau on the east coast of the peninsula, and not many hours distant from Singapore. It will be recalled by people familiar with rubber planting in the middle East that the Waterhouse brothers were the first Americans to go into the planting of *Hevea* in this section. They have had two rubber plantations for some years, but they are now planning something on a vastly larger scale. Their concession is described by the experts who have seen it as being extremely valuable, consisting of undulating country with rich soil on excellent harbor, the land near the water being well adapted to cocoanuts, while that a little farther back is said to be admirably suited to rubber. They have formed a company called The Endau Development Co., for the purpose of opening up, clearing, and properly developing this great tract.

The possibilities of rubber planting in the middle East were brought home to the Waterhouse brothers by the series of letters on that subject written by the editor of *THE INDIA RUBBER WORLD* when he visited the middle and far East in 1905. On reading these letters, they entered into communication with Mr. Pearson, and secured his permission to reproduce this matter for distribution among those who might become interested in Eastern planting. They reproduced these letters in convenient form and circulated a great number of copies, and this had the effect of calling general attention among Americans in the East to rubber possibilities in the Malay Peninsula and its neighborhood.

OPTIMISM IN SARAWAK.

By the way, a friend writing from Sarawak in Borneo takes a very optimistic view of the possibilities of that location. He writes: "There is no doubt that plantations in Sarawak give a bigger yield than in the Federated Malay States or Ceylon and this is due, I believe, to the huge rainfall we have here. I think we shall always be able to produce at a shilling per pound, and eventually when the trees get bigger, at 9 pence."

MR. F. CROSBIE ROLES ADVOCATES THE "CESS."

Mr. F. Crosbie Roles, well known to the rubber men of America, because of the prominent part he took in the International Rubber Exposition held in New York in the Fall of 1912, took a decided stand in a letter he sent a little while ago to the "Financier" of London in favor of a rubber cess—or, in other words, a general imposition of a tax on all rubber producers—for the purpose of developing new uses for crude rubber. He says: "I think it is generally recognized that a new industry, especially, needs exploitation. If Eastern rubber producers could

obtain and administer a rubber cess, the prospect of over-production a few years hence would be pushed away into the remote future." He believes that that is by far the most effective way of insuring such a development of the manufacturing department of the rubber industry that it will not be outstripped by the production of the crude material.

OIL TRACTORS ON RUBBER PLANTATIONS.

Oil tractors are proving of great value on rubber plantations. In the dry season, when the ground in some plantations becomes so hard that a plow hauled by bullocks is of no value, the oil tractor does its work admirably. Harrows can be attached



TRACTOR AT WORK.

to it 10 feet wide, which destroy the weeds and grasses that are detrimental to the proper growth of the rubber trees, and plow up the ground, loosening the soil so that moisture is more readily absorbed and retained during the dry season. The item of fuel expense is quite inconsiderable in view of the large amount of territory these tractors can cover in a short time. They can be operated very easily in a plantation where the trees are as much as 15 feet apart.

PRACTICAL TEST OF WICKHAM SMOKE CURE

The Ceylon Department of Agriculture has sent to London a consignment of 560 pounds rubber prepared by the Wickham



RUBBER PREPARED BY THE WICKHAM SMOKE CURE.

smoke cure apparatus in response to a request from Mincing Lane for a quantity sufficient for trial. An offer was made of 4d. per pound above the regular price of plantation at time of settlement. The accompanying cut shows the rubber prepared for packing.

The Coagulation of *Hevea* Latex by Smoking.

THE subject of coagulation is one that has been treated frequently and at length in these columns, but it is always an interesting topic and constantly receiving attention from the rubber experts, among whom is M. V. Cayla, who contributes a detailed discussion of this topic to a recent number of the "Journal d'Agriculture Tropicale." There is not much in his contribution that is strikingly new, but quite a little of it seems well worth reproducing.

One of the principal points he emphasizes is the question: What factors in the process of smoking produce the admittedly superior quality of Pará rubber so sought after in plantation rubber and which is generally attributed to the Amazonian method of smoking?

With respect to the comparative merits of Pará and plantation rubber, some English manufacturers, as a result of factory trials, have pronounced "Smoked Sheets" (sheets smoked after coagulation) to be as good as the best Pará. The author regards these cases, however, as exceptions, referring to the premium which Pará rubber commands, as well as to its loss in washing being four to five times greater than that of plantation rubber; a considerably higher scale of value being thus established for the Brazilian article.

THE COAGULATION OF *HEVEA* LATEX BY SMOKING.

Most of the processes for coagulating *Hevea* are, in fact, inspired by the Amazonian smoking method; in some cases pretty closely, but not entirely realizing it in any instance. Smoking may be regarded as a complex action, or rather a group of actions. In dealing with a material so sensitive as rubber to the slightest external influences, the most infinitesimal factor may possess importance.

The numerous effects which are developed in the preparation of "Pará Hard Fine" may be divided into three groups: Chemical, physical, and mechanical, which are described as follows by M. Cayla:

CHEMICAL EFFECTS.

This concerns the quality of the smoke. If my information on this subject is correct, a complete and systematic chemical study of the different kinds of smoke has not as yet been made; but details in regard to the fuel used will allow us some reflections.

The fuel consists either of palm nuts, of resinous woods or of green wood. There is, consequently, a certain diversity. I have mentioned these fuels in the order of the preference expressed for them by the *seringueiros* of the lower Amazon, who further show their preference for the nuts of the particular palm tree known as the *Attalea*, the *Maximiliana* and the *Euterpe*, and for the dry woods of the massaranduba and the pao d'arco. We cannot give the botanical origin of these woods, which appear to be quite plentiful; they are hard woods, usually of a yellowish or reddish color and heavily impregnated with resinous substances. The *seringueiro* collects his wood ahead and prepares it, splitting it into sticks. But there are regions that contain few or none of the necessary palms or the valuable resinous trees, consequently the *seringueiro* has a struggle to get them, so that there are considerable differences in the fuel used, not only in the various districts of the Amazon basin but even by the same *seringueiro*. Nevertheless, the smoking, properly conducted, always yields excellent results.

It is necessary, therefore, to determine whether in the smoke of these various fuels there is always to be found one or more essential substances which impart the quality, or whether this quality can be imparted by a whole series of substances belonging to the same chemical group and which are to be found, one or another, in the products of combustion.

It will be seen that it is dangerous to attribute to this or that constituent of the smoke the essential part in the coagulation or the determination of quality. It seems certain, however, that, as has often been stated, these fumes, in addition to their coagulative action, exercise a preservative effect by impregnating the coagulated gum with various principles, such as creosote, formalin, etc.

PHYSICAL EFFECTS.

Coagulation by smoking is a warm coagulation. The temperature of the smoke, obtained by holding the bulb of a thermometer at a distance of several millimeters (a millimeter equals approximately one-twenty-fifth of an inch) from the mass of latex spread on the *bolacha* (biscuit) is above 72 deg. C. (162 deg. F.); I would not be astonished if it reached 80 deg. C. (176 deg. F.). A considerable portion of the heat would be applied to the vaporization of the water contained in the latex.

MECHANICAL EFFECTS.

The masses of rubber coagulated by smoking are still far from possessing the properties of the commercial gum. The coagulum is of a light cream color, of medium elasticity and considerable plasticity. On pressing on the surface, the impression of the finger remains. Withdrawn from the action of the smoke, on cooling and expelling the water (and the substances which it contains dissolved or in suspension) the gum assumes a more and more firm consistency and the impressions disappear. Thus a *bolacha* (a biscuit of rubber), placed on the ground to dry, will not be round but flattened on one side; if it rests on a mat, it will carry the impression of the mat, etc. There occurs, little by little, an interior process that modifies the physical condition of the coagulum; while its volume is reduced, the water is eliminated and the gum turns brown, almost black, on the outside compared with the inside; which is said to be caused, at least in part, through oxidization by the air. This contraction may last for days and weeks. The work that is done by presses on the plantation is therefore executed spontaneously, but in this instance the operation is evidently much slower.

The arrangement in successive concentric layers, moreover, facilitates this spontaneous working. A layer B, in its contraction, causes pressure on the underlying layer A; the layer C, which lies over B, presses in turn on the latter. These two efforts are combined to act on the layer A; and so on. To the contraction belonging to each layer is added the pressure resulting from the contraction of the superimposed layer. The pressure to which the various layers are exposed is therefore not only slow, it is also progressive. Consequently, the form even of the *bolachas*, more or less regularly spherical or ellipsoidal, causes this normal pressure to follow a radial direction. And as we may assume that a good operator spreads on the ball sufficiently regular layers, each layer is subjected over its entire surface to a pressure distinctly regular in intensity and directed towards the center.

That which I have just described shows that there are several differences between the method perfected for pressing the rubber on the plantations and the Amazonian method, which may be characterized as slow, continuous, progressive and regular.

These observations, incomplete tho they are, enable us to understand how difficult it is at present to choose among all the factors we have considered (and possibly still others) those particular factors that play the determining part in producing the high quality imparted by smoking. We shall not be astonished, however, to find that the chemical properties of the Amazonian smoking process do not play so vital a part that we cannot use entirely different fuels and still get good results; nor

shall we be surprised to find that the physical and mechanical conditions of the coagulation, and the drying, also, all play a most important part.

Numerous explanations have been attempted with a view to making this superiority of the Amazon product comprehensible. One of the latest is that of Dr. W. Esch, who claims that the rubber manufactured in Brazil contains a smaller quantity of the salts pre-existent in the latex than the coagulum obtained in a mass by the addition of a coagulating solution—acetic acid for instance. This supposes that in the *bassia* (a sort of large metallic bowl into which is poured the latex that is to serve for coating the ball in the course of manufacture) there has been a beginning of the "creaming" so that the upper layers are richer in globules and the lower strata contain more of water and of salts. Dr. J. Huber indicates that he has never observed anything like this. I may state that this separation seems very improbable to me. The *cuya*, or cup, which the *seringueiro* uses to take from the *bassia* the latex for pouring over the ball, is plunged every minute into the mass of latex and insures a sort of continuous mixing.

We know, moreover, that if there are applied to the latex some of the effects produced by smoking, we obtain as a result inferior qualities—for instance, with acetic acid, with hot air or steam under pressure (Cross experiments), or by simple evaporation (old experiments by Wickham).

We see, therefore, that all the methods hitherto devised only slightly resemble smoking. Some are but remotely similar, such as the acetic acid process, in which only one of the chemical effects possible is realized, which can only play a certain part in the coagulation but not in the preservation, for here we operate cold, pressing the coagulum on the machine relatively quickly, and in the form of sheets, biscuits and blocks.

It seems to me that of the smoking machines thus far brought out the greater part are far enough from realizing the Amazonian process. According to the brief descriptions which I have seen, the Wickham apparatus is possibly that which most closely approaches it. The author believes that materials found in the East could play the same part as the fuel used in Brazil. I will not contradict this, inasmuch as I have stated that the fumes are sometimes produced by the burning of green wood of no special variety.

Nevertheless, will it be possible to replace, by a machine, the work of the *seringueiro*? I do not wish to maintain that smoking is a work of art; but it is, nevertheless, a trick, a knack to be acquired, an intelligent performance of the operator, who does not always work in precisely the same manner.

To obtain a well-coagulated ball, we require a determined fluidity of the latex. Too watery a latex cannot yield a good result. Fumes of a certain quality are also required (which the workman recognizes by their pale color), issuing in a jet of the desired strength. If these characteristics disappear he stops the operation and refills the stove with this or that fuel. The admission of air to the *bolhão* is regulated so as to promote or reduce the draught.

The *seringueiro* decides for each layer how long a time should elapse before he withdraws the ball from the effect of the smoke and dips it into fresh latex. This period is not always the same. I have noted variations from the normal period to three times as long for a small *plancha*. Only an experienced workman can appreciate at sight the requisite time. It is necessary, in fact, to cease smoking the gum when the layer has assumed a certain consistency; when, in other words, it is sufficiently but not excessively smoked. On this consistency depends, on the one hand, the good adhesion of this layer with that laid on over it; in other words, the future quality of the gum. The time that is taken to attain this consistency varies, according to the predetermined dimensions of the ball and the fluidity of the given latex, with the thickness of the stratum of latex (the *seringueiro* cannot always spread on the same quantity of latex) and with the

temperature and composition of the smoke. The good workman rapidly recognizes all these factors and works accordingly. The adhesion among themselves of the various concentric layers which form a ball and which we can detach by tearing off (which constitutes, so to say, the commercial definition of "fine Pará") displays variations. This is due to the fact that the construction of a ball is not effected at one time, and that between the various stages of smoking there are intervals. If these intervals are of too long or too short duration the exterior layer—the last coagulated—will have undergone modifications more or less serious in its physical structure, inasmuch as these are effected spontaneously in time; the adhesion to the fresh coagulum which forms the immediate upper layer depends on this physical structure, and will therefore vary more or less.

All these details have their importance in coagulation by smoking as relates to the researches in the desire to industrialize this process. What is sought is not only a certain coagulation but a better quality of rubber. To realize this quality, we ask ourselves whether in reality a machine can replace human labor. And then again, can it be claimed that coagulation by smoke offers an economical advantage? Accomplished by one man it requires much time, an experienced handworker who is willing to work in the midst of fumes, which, highly charged with antiseptics, are injurious to the mucous membranes and the respiratory apparatus.

Moreover, while smoking insures a certain uniformity in the gum produced, it is, as a matter of fact, a very limited uniformity, for it is confined not only to certain rubbers but even to the output of certain *seringueiros*. This is due to multifarious causes which would take too long to consider. This tends in the meantime to sustain the opinion that coagulation by smoking is not very simple or very easy to accomplish.

On the whole, it is undeniable that coagulation by smoking confers on the gum altogether superior qualities, and in seeking the reasons we are reduced to hypotheses. As to knowing whether there is an economical interest in generalizing the process by mechanical means, experience alone can tell us what would be the increased value of the product and what would be the cost of treatment. But in the last few years these facts have been placed in evidence, viz.: that the smoking machines invented in Brazil are hardly to be seen, except in museums, and have not supplanted the ancient and primitive method, and that more perfect machines set up on some plantations in the Orient have resulted in disappointments. Finally, it is in Indo-Malaysia that the practice is spreading more and more of smoking the "sheets" and "crepes" after coagulation, and in some instances the method has furnished economically a product of very high quality.

THE LATEST PATENTS FOR RUBBER CURING DEVICES

In connection with the foregoing article, by M. Cayla, on latex preparation by smoking, it may be of interest to note that a recent issue of "Ceylon Observer" records a patent (No. 1312, dated December 5, 1912) issued to Francis Alban Byrne, on "Improvements relating to the coagulating and curing of rubber," in which the inventor proposes to subject the latex to the vapors of substances obtained from the destructive distillation of wood, such as wood-tar and (or) pyroligneous acid, heated in such a manner as to effect their complete and quick volatilization, the fumes thus created being brought by any convenient means into contact with the latex.

Another patent (No. 1352, dated June 14, 1913), issued to Leonard Gastrell and Owen Dunbar de Vos, applies to a machine for coagulating and curing rubber. The latex is contained in a suitable receptacle and a revolving drum is brought in contact with it so that a coating of latex adheres to its surface. This film of latex is exposed to suitable smoke or fumes to effect its curing, which is accomplished by a revolution of the drum in a smoke chamber. The film of cured rubber being then detached, the process is practically continuous.

THE RIO RUBBER EXHIBITION OF OCTOBER, 1913

FROM the very inception of the measures which culminated in the establishment of the government bureau styled the "Defesa Da Borracha," Rio has been the pivotal center of legislation affecting rubber. It was at that city, in the summer of 1911, that delegates from all parts of Brazil met to submit their views to the government. These views led to the subsequent legislation of January and April, 1912, one of the sections of which provided for triennial rubber exhibitions at Rio, the first of these to be held in May, 1913.

After several postponements, the Rio de Janeiro Rubber Exhibition has taken place. Originally fixed for May 13, it was first put off till September 13 and again to October 12. On October 11 (the day before the official opening) a private view was attended by Marshal Hermes Da Fonseca, President of the Republic of Brazil, accompanied by his staff, which included Dr. Pedro De Toledo, Minister of Agriculture, Dr. Pereira Da Silva, Chief of the Defesa Da Borracha, Admiral José Carlos De Carvalho, in official charge of the exhibition, and various other officials.

Under the special escort of the officials connected with rubber, the President then made a tour of the exhibition, carefully studying each section.

The object of this preliminary official inspection was to enable each of the various members of the cabinet to acquire a personal knowledge of the connection between his department and the broad scope of rubber and its products in what was the world's largest source of rubber.

With a view to a more intimate exchange of knowledge as to their product by the separate states, there had been arranged at this exhibition samples of the different types and species of rubber produced in the various parts of Brazil. Information had been compiled as to cost of rubber lands, wages, climate, extraction and preparation of rubber. This information was so grouped as to afford comparative information about the various features of the questions now engaging the attention of rubber experts. The information also covered freights, taxes, duties, and complete data regarding the rubber industry. This printed matter was intended for the enlightenment of Brazilian as well as foreign visitors, and included diagrams and monographs.

An interesting feature was the examination by the President of the process of smokeless preparation of rubber, invented by Dr. Cerqueira Pinto, who claimed superiority for his process to any other for the purpose, excepting the metallic drum of Admiral José Carlos de Carvalho. The learned doctor said that the Brazilian government had already made a contract for the introduction of his process.

Of remarkable interest were the exhibits of sheet rubber from the states of Matto-Grosso, Amazonas and Pará, which supply

a large part of the Brazilian rubber exports. Minas-Geraes likewise had a good display, representing *Manicoba* and *Mangabeira* rubber. The large daily attendance at the Monroe Palace has furnished convincing evidence of the keen interest felt in the exhibition.

There has been a total absence of jealousy between the representatives of the East and the West, Dr. Pereira da Silva having accorded a place of honor to the collections of Ceylon and British Malayan rubber.

On the following evening, Sunday, October 12, the President of the Republic repeated his visit, for the purpose of formally opening the exhibition. The inaugural ceremony took place in the upper saloon of the Monroe Palace, before a select number of high officials and personages representing Brazilian society.

The President on ascending the platform was accompanied by Dr. Pedro de Toledo, Minister of Agriculture, who delivered the address, extracts from which are quoted below.

The cinematograph display gave a personal interest to the

exhibit, illustrating the production of rubber in the various states of the Brazilian Republic.

Many ideas were suggested by this instructive exhibition, a goodly number of which will doubtless be realized at next year's London display.

The exhibition included sections demonstrating the cultivation and preparation of rubber and the manufacture of rubber goods. It presented a comprehensive display of the



THE MONROE PALACE, RIO.

whole of the rubber industry as carried out in the producing states represented.

In a special pavilion were grouped a number of machines used in the manipulation and preparation of rubber, and, to a certain extent, for manufacturing. These machines all came from Great Britain.

The principal exhibits of machinery by English manufacturers were those from David Bridge & Co., Ltd. (two machines); Francis Shaw & Co., washing and drying machines; Robert Warner & Co. (two machines).

It would seem that the advantages of the exhibition were to a great extent not recognized by European manufacturers.

DR. PEDRO DE TOLEDO'S SPEECH.

On the occasion of the opening of the exhibition the formal address was delivered by Dr. Pedro de Toledo. In this address he pointed out that every industry has to encounter struggles before reaching greatness.

To use his own words:

"In the fantastic wilds of the Amazon Valley arose one day the industry of black gold. It went on thriving, at the loss of thousands and thousands of lives. Those nameless heroes, the rubber gatherers, amid the squalor that wasted their bodies, went

on toiling day by day, raising piles of wealth which he had spent on majestic palaces, pearls and diamonds.

"The successive governments, dazzled by the prosperity of the times, traveled as if blindfolded. The profits of the *Hevea Brasiliensis* industry filled the treasury, and it appeared inexhaustible. The markets of the world were controlled without competition and without comparison.

"With the sole end of realizing as much revenue as could be obtained, they increased the taxes on the product, rendering it dearer at ports of embarkation. And this revenue they devoted to all kinds of objects save the industry itself.

"While we stood still gathering and preparing our precious latex, other governments went on silently importing *Hevea* seeds, destined in a brief period to constitute those great forests of the East which have now entered into frank competition with our native wilds in supplying the world with our greatest export product."

After referring to the study of the rubber question as embodied in the recent legislation as a work of economic, political and social significance, he said:

"We propose to circumscribe the crisis, relying on time, the continuance of our policy already begun and on our confidence in our destiny as our chief elements of victory."

THE RUBBER MANUFACTURING INDUSTRY IN BRAZIL.

DEALING with the above subject in a paper read at the late Pará congress, Dr. Manuel Lobato contended that the international exchange of rubber, deviating from the general law of supply and demand, forms a special and complicated network of its own. It is the buyer who regulates prices, without regard to the quality of the article or the interests of the seller. The rubber trade, he added, is always at the mercy of periodical destructive crises, while living expenses continue.

Without a complete reform of mercantile customs, Dr. Lobato believes that it will never be safe to attempt rubber manufacturing in Brazil. The large factories producing these goods in other countries have immense capital, which he thinks would not be the case in Brazil. Small factories, with a reduced output, would not produce favorable results. While prohibitive duties are placed on foreign goods, those which are made in the country suffer from the disadvantage of high-priced labor and do not satisfy the consumer.

Regarding the anticipated orders from public bodies, Dr. Lobato does not approve asking favors from the authorities and prejudicing the interests of private contractors by making low offers.

The speaker further said: "Establishment of the manufacturing industry does not seem to me advisable at the present moment, unless our commercial usages are placed on a more secure basis, under which capital may be absolutely guaranteed, or as nearly so as is possible by human legislation."

He summarizes his recommendations in the three following conclusions:

"1. The attraction of capital to the State is a necessity. This result, however, will never be possible without a complete reform of our commercial usages. On the other hand, the law must protect this capital by unquestionable guarantees, so that it may never be at the mercy of adventurers or unscrupulous parties.

"2. There is no doubt that the manufacturing industry will afford a favorable investment for capital, provided raw materials are used, which can be furnished by our Flora and Fauna. Success is only to be anticipated in conjunction with a more intelligent co-operation than at present exists.

"3. The industrial manufacture which depends upon imported

raw material will never attain great success; by reason of the customs' duties—even tho slightly modified. Unless such



DR. MANUEL LOBATO.

modification were carried to a greater extent it would exercise no influence whatever.

"At present, we should not depart from the principle that an extensive cultivation of the soil should be urged, as being productive of immediate benefit to the State."

ADULTERATION IN THE RUBBER INDUSTRY.

AMONG the papers read at the recent Pará Congress was one of special interest by Senhor Leopoldo Penna Teixeira, dealing with measures for the prevention of adulteration and abuses in the rubber industry. In opening he referred to the decline of the brilliant but illusory prosperity of the Amazon valley. This fact he attributed to the restricted term of the successive administrations, to the want of continuity in plans, as well as to the individualism of public life.

With reference to the question of adulteration, the speaker quoted a statement received by him from Senhor J. Cohen, formerly the owner of a *seringal* and a merchant in the Island region, but at present retired from business. Mr. Cohen stated that he had long been investigating the real cause of rubber adulteration, for which task he enjoyed special facilities, owing to his relations with the merchants of Pará and the interior as well as with *seringueiros*. From his knowledge of the situation, he asks whether adulteration is increasing as it did during the great crisis of 1900.

At that time several Pará commercial houses sent to their *aviadores* large quantities of wheat flour, to be sold to *seringueiros* for the purpose of increasing the weight of their product, which was then sold to certain Pará buying houses as fine rubber. At that time, the cry was for "rubber and more rubber" of whatever description.

Another cause of fraudulent methods arose from discord between the owners of adjacent *seringaes*, which led to some local merchants advising certain *seringueiros* to defraud in the quality and weight of their rubber, as it was sold to a competitor.

That such practices still continue is shown by the fact that in 1912 an English company in the municipality of Anajás received 4000 kilos of rubber which the Pará buyers would only accept as Sernamby, on account of the scandalous and gross adulteration. On this basis the representative of the English

company, through the good offices of the English consul, disposed of the rubber. According to Mr. Cohen, the parties chiefly concerned in this fraud were leading men in the politics of the locality.

Regarding the production of native *seringaes*, the speaker expressed the opinion that an absolute increase was only possible through a system by which the worker will contribute his contingent of labor regularly during the ordinary crop season. Each *seringal* should be worked a certain number of days, to be determined for each crop. Work should always be under contract, and not optional, the object being the regular and maximum production of the *seringal*.

In continuation, Senhor Teixeira urged that the transformation as far as possible of the bulk of the latex extracted, into high-grade products, and the methodical improvement of the unavoidable inferior types, call for the energetic action of employers. The necessity is urged of prohibiting by the necessary regulations all extractive processes injurious to the *seringueiros*, and all systems of preparation impairing the characteristic qualities of rubber—elasticity, resistance and purity.

The suggestion is made for the Commercial Association to establish quotations for all new and old types of Pará rubber, so as to encourage the manufacture of the grades most in favor.

Other portions of this interesting paper deal with the proposed regulations as to Sernamby, the action of public authorities, the number of incisions per day, the character of the *machadinho*, the introduction of new tapping instruments, and other subjects of interest.

In his final remarks, the speaker said that much could be done to prevent these adulterations and abuses, which disturb the existence of the important export industry of Amazonia, if the responsibilities were rightly understood and rendered effective. This could be done by means of district committees, on which would be represented proprietors and lessors of *seringaes*. These bodies would look after the rubber industry, both as to cultivation and preparation, as well as to its industrial progress. They would make reports to the State Department of Agriculture as to local needs with statistics of existing *seringaes* and plantations.

DR. MULLER'S WELCOME HOME.

Prominent among recent events of international moment was the visit to this country of Dr. Lauro Müller, Brazilian Minister of Foreign Affairs. As chronicled in the August issue of the INDIA RUBBER WORLD, he returned to Brazil on July 16 on the warship *Minas Geraes*, taking with him the good wishes of his many American friends.

His reception at Rio de Janeiro was marked by appropriate festivities, in the course of which Dr. Miguel Calmon, in the name of the Reception Committee, delivered a cordial address of welcome. In this address he expressed "the sentiments of affection and respect entertained by friends and admirers for the illustrious Brazilian statesman who had returned home, crowned with the laurels bestowed on him by the greatest of American nations. Brazil was not alone in these expressions, being joined in them by the other South American powers."

Continuing his remarks, Dr. Calmon traced the public career of the minister and his connection with such statesmen as Rio Branco and Nabuco. He also referred to the work undertaken by Dr. Muller as president of the National Society of Agriculture.

In his concluding words, the speaker said: "Dr. Müller is one of the greatest realities of the present time, and one of the greatest elements of hope for the future. He is an honor to his country."

Official statistics show Brazilian imports for 1912 equal to \$316,869,855, and exports \$360,000,000.

SOME NEW TAPPING KNIVES.

PROBABLY as much depends on the method and efficiency of gathering the latex as on any of the subsequent plantation processes for the successful harvesting of a season's rubber crop. That designers realize this is demonstrated by the large variety of designs in tapping knives that have made their appearance on the market in the past. And new designs are still forthcoming, as is shown by the recently introduced tapping tools illustrated herewith.

Rubber experts long ago realized that the indiscriminate cutting

and slashing of the bark only resulted in the death of the tree or in its greatly decreased capacity for yielding latex. It is for this reason that much attention has been given to the design of tapping-knives that will prick the bark of the tree to a proper depth and at the same time leave it uninjured. Two

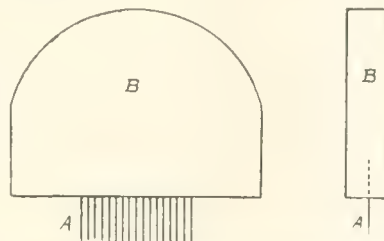


FIG. 1. THE LEDEBOER PRICKING NEEDLE TOOL.

diagrammatical views of such a new tapping tool, designed by Adriaan J. M. Ledeboer, a planter of Kalisat, Java Dutch Indies, are shown in Fig. 1. In similar devices, the teeth have usually been broad and wedge-shaped. Owing to the breadth of these teeth, only a few could be employed in a row of certain length, so that only a limited number of incisions could be made. Also, the breadth of the teeth caused wide cuts. This new tapper or pricker comprises a row of parallel needles *A* secured in the holder *B* very close to each other. This holder may be of iron or wood, and the needles are set only about 1/16 inch apart and project about 1/2 inch from the holder. In using this tool, only those cells are pricked which are in the cortex, while the cambium remains uninjured. The wood underneath is also undisturbed, since it would be impossible, without great force, to press all of the needles into the wood.

Another new tool, which takes the place of the ordinary gouge for collecting bark parings, is shown in Fig. 2. Ordinarily, bark parings contain about 18 per cent. of pure rubber. A laborer will take off in an average day's work about one pound of parings, so that for every 100 laborers tapping, 18 pounds of rubber will be wasted if the parings are not collected. The cutter of this new tool is in the shape of a hollow tube, attached to a large hollow handle which acts as the bark collector. By taking off the parings with this instrument, the bark is prevented from falling to the ground. This prevents sand, gravel and dirt from becoming mixed with the parings and contributes to the life of the macerating machines, since a great part of their wear is attributed to the action of these foreign substances on the rollers. This tool is marketed by the Planters' Stores & Agency Co., Ltd., in the Malay States, Straits Settlements, and Ceylon.



Fig. 2. NEW BARK PARING COLLECTOR.

NEW GRADE OF BRAZILIAN SHEET RUBBER.

The "Revista da Associação Commercial do Amazonas," Manaus, states that Messrs. B. Levy & Co., the well-known exporters, have recently made a shipment to London of some 200 pounds of superior quality rubber from the Rio Madeira, prepared in sheets, according to the "Tamboir" system. It is added that shipments of this grade will shortly follow from other exporters.

THE RUBBER MANUFACTURER'S TRANSPORTATION BURDEN.

IN the winter of 1834, President Andrew Jackson, being in Boston, visited a rubber goods factory at Roxbury, where he was presented with a suit of rubber clothing, which he donned and wore throughout the day, which was rainy. South American rubber shoes had been on the American market since 1823, and sold at retail at from \$3 to \$5 per pair. Domestic rubber shoes had been on the market five years. President Jackson in speaking about rubber shoes and rubber clothing that day, said that "the use thereof could be greatly extended in the remote west and south but for the high cost of carriage, which was a great tax against manufacturers and consumers."

At that time, the population of the nation was 13,000,000; the centre of population was nine miles southwest of Baltimore; the railroad mileage was 238. Seven-tenths of the population lived along or within fifty miles of navigable waters. Manufacturing was being developed only at ports or along or near navigable rivers, so that products could be forwarded by sail or steam packets. In the early days of the rubber working industry in eastern New England, nearly all the shipments of finished goods for New York, Philadelphia, Baltimore, Richmond, Charleston, Savannah, Mobile and New Orleans went by packet sloops or schooners. Few of the schooners were over 200 tons burthen. Freight charges were very low as most of the packets were owned by the masters and mates and their neighbors, and it was before the days of plastering ships and railroads with a dozen kinds of interest-bearing securities. Even on rubber goods shipped from New England to New Orleans by sail packet, and thence to points on the Mississippi and Ohio rivers the rate was not, in years when competition was active in western freighting, as much as it is today by the pound or reckoned upon a basis of cubical content. But it was held then, as it is held today, that the cost of transportation is an enormous tax against producers and consumers.

The transportation tax, as it exists today under the nation-wide community of interest relations which exist between nearly all our railroads and coastwise, lake and river steamships, is seen every day in New England, the Middle and Western States, where many animal-hauled vehicles are used to carry inward and outward freight from five to twenty-five miles, because neither the railroads nor the steamboats, that are within a few yards of the highways, will give as low rates as the manufacturers can haul short way freight for, under the same methods in use by the people of Asia six thousand years ago. In parts of New Jersey, where the making of rubber products is a great industry, one can see horse vehicles owned by such concerns moving outward and inward freight to many points, where from the wagons may be seen the tracks of two to four trunk line railroads, and one to two canals. The railroads long ago got control of the canals, and closed one and ruined the other. As for way freight, they will not take it, except at extortionate prices, yet in that State, as in the other Middle States and in New England, hundreds of thousands of empty freight cars a year are moved past rubber goods and all other kinds of manufacturing plants.

It is a remarkable fact that the rubber goods factories of the nation are "bottled up"—as the railroad men's expression is—by the community of interest transportation lines, land and water—to the extent of 97 per cent. of their total number. That is to say, these plants and their warehouses in large cities, and the warehouses of the great distributors of rubber goods are at points where, in railroad phrase, "the freight charges are all that the traffic will bear."

Today the centre of the population of the nation is in Indiana, but a few miles distance from Chicago. This physical fact exhibits what a tremendous tax is transportation against the rubber working trades everywhere, but especially so in the Cen-

tral West and in the Pacific Coast states. During six months of the year, there are daily on the tracks of trunk lines between the east and west, and especially between Chicago and St. Louis and far western points, at least eight hundred miles of empty cars, returning after having discharged food products, timber and minerals in the east. One would think that the operators of those lines would see the wisdom of filling those cars with manufactures carried at a low and yet profitable rate that would enormously stimulate the development of the far west. Of course the cost of hauling a million empty freight cars the average distance of 2,000 miles a year is charged off to the food products, mineral and lumber industries, and makes a part of the large increase in the cost of food to the consumers; and has thereby so reduced the spending power of millions that the consumption of dry and rubber goods and many other articles is less per unit of population than it was when competition existed in the transportation industries.

That "kissing goes by favor" among many of the communards of interest, when it comes to getting low rates for concerns in the manufacturing and exporting lines which they control, was lately exposed by a bright young man who was trained in the freight department of a great railroad, and who recently married a daughter of the chief executive of a rubber working corporation. This young man went into business with his father-in-law, and soon found, that in popular phrase, the concern and its customers were being "soaked" by the trunk line roads in a community of interest. He proved his statement by his first day's work in re-routing for Denver, whereby he saved the consignees \$35.47 a car load from the regular scale they had paid. In another instance, he re-routed from a New England point to a city in central New York, cars on which the saving over the direct run charge came to \$10.26 a car; the goods went by way of Canada, and by devious ways in the west, and then down to the point of destination.

A few days ago, a great local house in army and naval engineering supplies booked a cablegram order from the Russian government for certain kinds of mechanical rubber goods. The ocean freight under which the goods were shipped—3,250 miles to a German port—came to a little less per 100 pounds than the freight on the same goods from a point just about 50 miles distant from New York.

The operation of motor trucks by many makers and distributors of rubber wares in the Eastern, Middle and Central Western states is being rapidly developed for zones of 25 miles radius—or thereabouts. Three and five-ton trucks are used; the velocities, under the best conditions, are from ten to twelve miles an hour. Last year, the average velocity per hour of all the steam railroad freight trains moved in the nation was but seven and three-quarter miles. In this the delays at switching and water and fuel stations are included. A considerable number of rubber goods manufacturers desire to use ten-ton motor cars but cannot do so because of the structural weakness of most of the highway bridges of the rubber working zones. The present writer has just gone over this ten-ton motor truck matter with the executive officers of a great rubber working corporation in New Jersey. He found by engineering tests, that ten-ton trucks could not be used at many places in that State, because of the extreme weakness of highway and canal bridges. In fact, five tons is a tremendous strain upon the best of the highway bridges in that State, and few of the Canal bridges are safe when three-ton motor trucks cross them. By making detours, a considerable number of motor trucks owned by rubber working concerns are being operated between New Jersey plants and New York City and vicinity and between those manufactories and Philadelphia and vicinity.

The railroad communards of interest, through means long used to bring legislators to their way of thinking, are hindering or stopping the improvement of highways and the strengthening of

highway and canal bridges everywhere, in order that the motor truck way of escaping from slavery to extortionate way freight rates may not become an important factor against the "bottlers up" of most of the railroads.

SYNTHETIC RUBBER FROM TWO ASPECTS.

SYNTHETIC rubber has to be considered under two aspects, technical and economic. The technical aspect has been fully treated in scientific literature and to a certain extent in the general press. The attention which was aroused by the discoveries of Harries, Hoffmann, Perkin, Fernbach and others, will be recalled.

ECONOMIC ASPECT.

With regard to this branch of the subject, an interesting communication has recently appeared in the "Bulletin of the Brazilian Bureau of Information in Paris." This article follows up a discussion of the question which appeared last year in the columns of the "Jornal do Commercio" of Rio de Janeiro.

In the first place, a distinction is made between "synthetic" and "artificial" rubber. The former must be identical with natural rubber and instead of being a vegetal production must have been created from raw material and possess the same chemical composition as the natural gum. Factitious or artificial rubbers consist of substances analogous to india rubber, but which have only certain characteristics in common with it. They contain no trace of india rubber, either when used separately or as an admixture with "real rubber" for manufacturing purposes.

WHAT IS REQUIRED OF A SYNTHETIC RUBBER.

In order to successfully meet the natural product, synthetic rubber must compete in both price and quality. Of all the various processes tried, that of polymerizing isoprene or carburet of hydrogen has proved most successful; but the essence of turpentine from which the isoprene is derived is a very expensive material. Very few patents, it is added, deal with any raw material cheap enough to be practically useful.

QUALITY OF SYNTHETIC RUBBER PRODUCED.

That, apart from the question of cost, synthetic rubber has been produced in the laboratory, is admitted to be the case; but the quality of such rubber has considerably varied. In some cases it has been hard and inelastic, while in others it has come up soft and plastic. Some of the samples have been fairly elastic when first prepared, but oxidize rapidly in the air, becoming "sticky." Few of them, as far as the "Bulletin's" knowledge goes, are able to stand the first stages of the process of manufacture.

"The fact, however, remains," it is added, "that synthetic rubber has actually been produced, and the numerous chemists who are investigating the problem may sooner or later discover a means of improving its quality, while at the same time reducing the cost of production."

ACCORDING TO TELEGRAPH REPORTS, the German Secretary of State, Dr. Solf, who has recently visited Southern Cameroonia, has refused to consider the abolition of the export duty on crude rubber (9.52 cents on 2,240 pounds), shipped from Cameroon, much to the disappointment of the producing interest. A memorial requesting the removal of the tax, in view of the unprofitable condition of the trade, has been addressed to the State Department by the Berlin Chamber of Commerce. An urgent memorial on the subject has also been forwarded to the government by the Economical Association of the northern district of German East Africa, in which the present unfortunate condition of the rubber interest of the colony is very forcibly stated.

SUMMER BOB-SLEDDING WITH RUBBER TIRES.

THERE are certain places in the Alps where bob-sledding is a famous sport, but under normal conditions this is a sport that is confined to winter. A certain devotee of this pastime, however, has conceived an idea by which it may be enjoyed quite as well in July and August as in January and February. He



SUMMER BOB-SLEDDING IN THE ALPS.

has constructed a bob-sled like the ordinary sled except that in place of runners it has wheels, about the size of bicycle wheels with pneumatic tires; and this sled coasts down the Alpine slopes as rapidly as it would in winter on the customary runners. In short, the coasters, instead of slipping over the snow, ride on air, with results that are said to be highly satisfactory and under conditions rather more comfortable than those that obtain in the Alps in midwinter. The accompanying illustration is taken from "The Sphere" of London.

COTTON CONSUMPTION OF THE WORLD FOR ONE YEAR.

Of the world's consumption of cotton for the year ending August 31, 1913, amounting to 20,277,386 bales (a bale being 500 pounds), 13,760,261 of this number were American; and of stocks on hand at the close of the year amounting to 3,540,771 bales, 1,622,366 bales were American. The total number of cotton spindles in the world is estimated at 143,452,659, and of this number 129,895,651 spindles (64,325,243 mule and 65,570,408 ring) were in work during the year, 21,149,839 spinning Egyptian cotton, and 108,745,812 spinning all other kinds. There are also reported in course of construction 2,563,544 additional spindles, almost half of these in Great Britain, the remainder divided between Japan, Germany, Russia, Canada, Sweden, France, Austria, India, Belgium, Norway, and Italy, in the order given.

Rubber Hose in the Machine Shop and Foundry.

PROBABLY no other branch of the rubber industry combines such a diversified list of uses as does that of rubber hose. At first glance this would seem to be a subject easily covered in a few short paragraphs, but when we stop to consider for what extensive and varied uses rubber hose is employed in air compression machinery alone, without taking into account its now indispensable employment in pneumatic tools such as riveters, drills, grinders and sand blasts, as well as in many other lines, it is easily seen that this is by no means an unimportant subject.

Rubber hose first came into use by virtue of its flexibility, and it is this important factor that makes it invaluable in many ways as a means of transporting such substances as air, water, steam, gas, sand, etc., to the points where they are to be used.

In the machine shop, perhaps, is seen the greatest variety of different classes of work in which rubber hose is used. Upon entering any engine repair shop of a railroad, for instance, one of the first things that attracts the attention is the b-r-r-r of a pneumatic riveter. Less than ten years ago nearly all riveting in boiler and engine shops was done by hand, but this has been gradually superseded by the more modern compressed air riveter. Such a riveting machine is held in the hands of the operator, and the hammer directed against the tail of the rivet at any desired angle. If it were not for the part which the rubber hose contributes to this important factor in engine and boiler building and repairing, it is easily seen that the scope of the pneumatic riveter would be extremely limited. But for the aid of flexible hose only such small work as could be easily handled would be subject to the advantages of this style of riveter, for the work would then have to be taken to the machine instead of taking the machine to the work.

The pneumatic riveter is used almost altogether in modern shops devoted to the manufacture of boilers and tanks of all descriptions. In such shops, where a number of riveters are constantly in use, it is necessary to install a storage tank in which

same or a similar arrangement is also used in pneumatic installations for nearly all other purposes, while air for operating riveters, drills, sand blasts, blow torches, etc., may be taken from the same pipe line.

The pressure in the storage tank may vary from only a few pounds per square inch up to 200 or more, and the strength of

the rubber hose must, of course, vary accordingly. A hose for pneumatic tool service must be light, strong and flexible to withstand intermittent pressures. It should remain free from kinks when bent in sharp curves and the lining or inner tube should be of heavy quality to protect the fabric. Hose of this type is built up of alternate layers of rubber and duck fabric, the latter varying from three to eight-ply; four and five-ply hose are the kinds most commonly employed in connection with machine shop tools. The demand for this type of hose has increased rapidly in recent years, due to the popularity of the pneumatic tool. For very high pressures the hose is usually armored with a coil of strong wire to

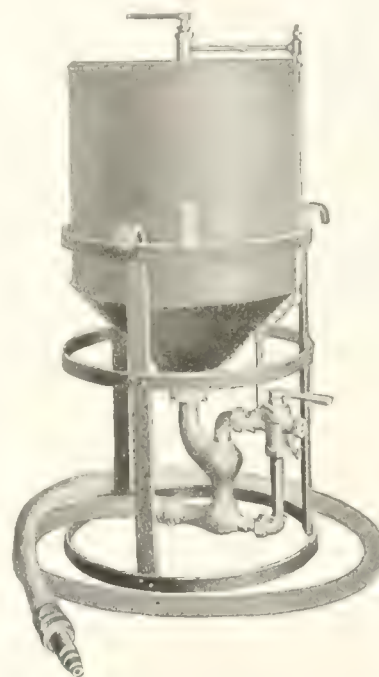


FIG. 2. DRUCKER SAND BLAST WITH RUBBER HOSE ATTACHED.

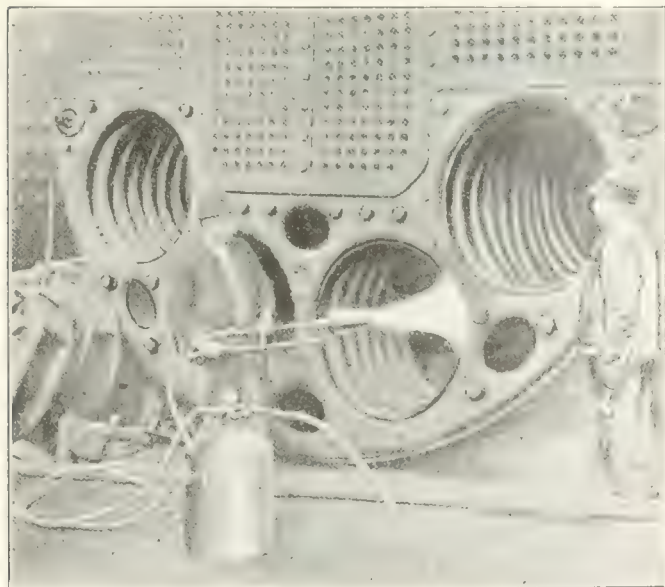


FIG. 1. THE ROCKWELL PORTABLE HEATER IN BOILER SHOP WORK.

the air is compressed by means of an electric or steam-driven compressor. From the tank the air is usually distributed around the walls of the building through iron pipes which are tapped at various points for making connection with the rubber hose. The

support the walls of the tubing and prevent them from blowing out.

It is sometimes much easier to take the tool to the work than to take the work to the tool, especially where moving the object which is to be worked upon involves heavy handling. Here, also, the rubber hose plays an important part. For instance, if it is required to drill a number of holes in a heavy piece of machinery which cannot be placed upon a drill press, how much more advantageous and labor-saving it is to simply attach a pneumatic drill to a hose and thus do the work in one-quarter of the time required by a hand drill. Many jobs which were formerly impracticable are now made easy and inexpensive through the introduction of the rubber hose in connection with the compressed air-driven drill. Hose for this purpose is of the same type and construction as that for the pneumatic riveter, the size and ply varying with the air pressure and size of the tool.

For conveying both steam and water in the machine shop and foundry the rubber hose has made itself indispensable. Every one knows the great variety of purposes for which water hose is used in the shop. The workman picks up a length of hose for a different purpose perhaps a dozen times a day. In the engine room the fireman keeps a hose attached to the water connection for the purpose of sprinkling the coal in order to settle the dust. In the machine room the hose is used for carrying water and oftentimes steam.

Hose for conveying steam must be of special construction on account of the constant heat to which it is subjected. The vital

feature of any steam hose is its tube or lining, since the tendency of the rubber is to harden or over-vulcanize under the heat. The average hose is vulcanized at a temperature of about 260 degrees F., and when we consider that steam under a pressure of 100 pounds creates a temperature of about 338 degrees (at 200 pounds the temperature is 388 degrees), the necessity of a special lining can be readily appreciated. Steam hose is constructed with from four to eight plies of fabric in $\frac{1}{2}$ to 2-inch sizes. If the pressure is more than 70 or 80 pounds per square inch the hose should be reinforced with wire or marline wrapping.

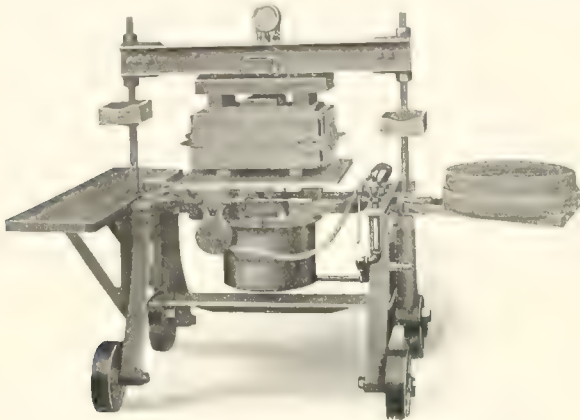


FIG. 3. THE RUBBER MOLDING MACHINE OPERATED WITH RUBBER HOSE

Where welding is done by means of the oxy-acetylene or other gas process, the torch is attached by means of a rubber hose to the gas tanks in order that it may be manipulated to the best advantage for heating the metal which is being welded. Here again the flexibility of rubber hose not only widens the scope of the new process of welding, but it also makes possible more convenient methods of accomplishing many other kinds of work which were slowly and clumsily done before the advent of the portable heater. On account of the penetrating ability of gas the lining and layers of rubber between the fabric should be very compact and durable. Such hose is usually made only in small sizes, under one inch in diameter, and with three plies of fabric.

In Fig. 1 is shown one form of a self-contained portable heater in which the attached rubber hose plays an important part. This torch has found a wide use in boiler shop work for shrinking, expanding, heating crown sheets, laying patches, drawing blisters, bending plates, etc. The metal coil which covers the hose is principally for protecting it from wear, since the pressure in this case is not excessive. Certain types of these heaters or torches, when the gas mixture is properly controlled, will give a light equal to more than 1,000-candle power; hence they are often used for night work in places where electric or other lights are not available.

In the foundry rubber hose is as indispensable as in the machine shop, but it is employed chiefly for entirely different purposes. Perhaps the most conspicuous use to which rubber is put in connection with foundry work is in its attachment to the sand blast. Ever since the beginning of the industry foundrymen have been confronted with unusual problems pertaining to the cleaning of special castings; but since the introduction of the sand blast many of these problems have proved easy of solution. One form of the modern sand blast, in which rubber hose forms an essential part is seen in Fig. 2. The tank portion of the apparatus comprises the container for the sand, while the air pressure is introduced through the valve at the side, this valve being connected with the source of the air pressure by means of a length of three or four-ply air hose not seen in the illustration. The hose shown connected with the tank conveys the sand under pressure to the outlet, whence it is directed with great force

against the casting. The workmen can move the nozzle about over the work as portions of the casting are cleaned. The apparatus shown herewith will clean from 3 to 5 square feet of steel plate per minute, and as much as ten tons of castings per day, according to the air pressure and the size of the nozzle used.

Sand blast hose must be of special construction in order to withstand the cutting action of the sand. A solid substance, such as hard-vulcanized rubber or a metal lining cannot be used, since these would be worn away very rapidly. Therefore, a thick lining of soft Pará rubber is employed, the lining being almost equal in thickness to the walls of the hose. Such hose rarely comprises more than four plies of fabric, since the erosion resisting qualities are more essential than strength.

Perhaps the hose which is most commonly seen in shops and foundries is fire hose. Where would civilization be today were it not for the introduction of rubber hose in fire fighting apparatus? Of course, hose made of other substances—such as leather—has been tried, but has always proven either too expensive or incapable of standing up under the wear and excessive strain to which they are subjected. Today almost every shop and factory of any size has its private apparatus and a squad of workmen trained to fight fires.

Another instance of the universality of the rubber hose is seen in its application to pneumatic molds and presses, two types of which are illustrated in Figs. 3 and 4. These presses are used for squeezing the molding sand tightly around the pattern so that a good, smooth casting will result. The rubber hose forms an essential part of this device also. It is so arranged that the nozzle or valve at the outlet end may be applied to or removed from the press almost instantly, while the operating lever permits any desired pressure to be brought against the mold. Fig. 4 shows the application of the rubber hose in this respect particularly well. In this machine the hose is designed to withstand an average pressure of about 80 pounds and to deliver about 4 cubic feet of free air per minute. In construction, this hose is the same as that used with other pneumatic tools. The advantages of this machine are many. It relieves the operator of heavy

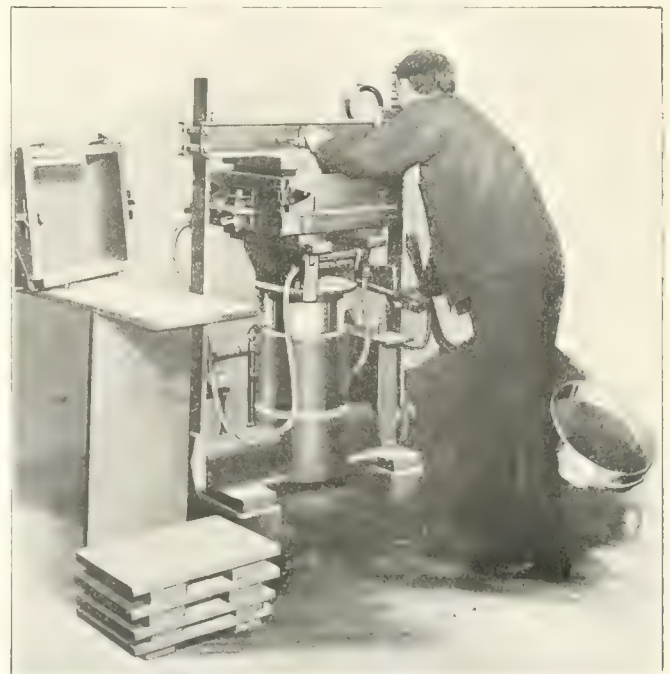


FIG. 4. TAMPOR AIR PRESSURE MOLD IN OPERATION

work and allows him to bend his energy toward greater production. Absolute uniformity in the density of the sand is obtained, by this means, and consequently the loss of castings

due to swelling or blowing of the molds is reduced to a minimum.

All of the machines mentioned above and many others now in use in shops and foundries, were invented after the introduction of the rubber hose and most of them as a direct consequence thereof; for were it not for the flexibility of rubber these tools would not be in existence. In the United States there are approximately 50,000 machine shops and 30,000 foundries, about 80 per cent. of which, according to a prominent machine manufacturer, employ such tools and appliances as those mentioned above. The amount of hose used in these shops for all purposes varies from 100 to 1,000 feet or more, with an average of approximately 300 feet. Therefore it will be seen that with the 64,000 or more establishments using this hose, the amount of rubber going into its manufacture for these few purposes alone is by no means small. An equal amount of hose is, at certain intervals of time, required for replacements, and it is gratifying to the rubber industry to realize that no other substance will meet the requirements and stand up under the abuse to which rubber hose is too often subjected.

MORE RUBBER TILING AND PAVING.

SINCE the question of rubber tiling was dealt with by THE INDIA RUBBER WORLD in the issue of August, pages 583 and 589, other instances besides those recorded at that time have been quoted by the English and Colonial press.

The opinion is freely expressed that with rubber at its present price we may look forward to its more extensive use for offices and for like purposes, as well as for many other uses. In this connection the London Metal Exchange is showing the way by adopting rubber as its principal flooring material, with a view to deaden the noise, and enable operators to follow the bidding with ease. A contract has been placed with the Leyland & Birmingham Rubber Co. for 250 square yards, at a cost of 30s. (\$7.29) per square yard. The design will be of a special character, the ground harmonizing with the color of the walls.

An interesting experiment was lately made at the junction of the New and Old Kent Roads (one of London's most crowded corners), with the rubber-capped wood blocks invented by M. M. Dessau. As compared with the ordinary concrete foundation of wood pavement the new system is claimed to be an improvement, as the wood blocks are imbedded in an ordinary asphalt grouting, while rubber caps prevent the penetration of moisture into the wood. A few weeks' experience has shown no disturbance under ordinary traffic.

There is apparently no difference in the condition of the rubber tiling of the Silvertown company, laid down eighteen years ago in the large entrance hall of the "White Star Line" offices, Liverpool, while the stone threshold has worn below the tiling and required to be replaced.

"Silvertown" tiling is used in the corridors of the new House of Assembly, at Cape Town, as well as in Buckingham Palace and Marlborough House, London.

A laudable effort to use its domestic product is reported from the Kuala Lumpur (F. M. S.) Sanitary Board, one of the members expressing the opinion that it was now worth while trying an experiment of paving "Jalan Raja" with rubber, in view of the present price. He agreed to provide a practical test of the strength and durability of plantation rubber under tropical conditions. The Board decided to obtain further information from Singapore rubber manufacturers as to the cost of producing plantation rubber blocks suitable for the purpose intended.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

A FEW MORE FIGURES ON OVERSIZED TIRES.

In our last two issues we published articles setting forth the advantages of oversized solid rubber tire equipment on motor trucks and gave some figures which demonstrated the unwisdom of trying to economize by the adoption of smaller and cheaper tires. As much or more has been done in the collection of similar data for pneumatic tires and we present herewith some figures supplied us by a prominent rubber company.

It has been shown time and again that overspeeding is one of the worst enemies of the rubber tire, because of the continued distortion to which the rubber is subjected. The rubber compound does not have time to recover from the shock before it hits the road again, and often the distortion is permanent. Equally as important as the question of speed is the proper size of tire for the load it is called upon to carry. It stands to reason that for a given weight of car the larger-sized tire will stand the greater amount of wear. But the percentage increase of the life of the tire far exceeds the increase of cost as well as that of the amount of rubber. In short, oversized tires are proven beyond any doubt to be a great economy.

The figures in the following table are taken from five different pleasure cars before and after equipping the wheels with the larger tires. In each case both the front and the rear wheels were of the same size, and not only was the capacity increased as indicated, but the life of each set of tires was lengthened to more than compensate for the extra cost.

Tire size.	Capacity.	Oversize.	Capacity.
30x3	1400 lbs.	31x3½	1700 lbs.
32x3½	1800 "	33x4	2000 "
34x4	3000 "	35x4½	3700 "
36x4½	3800 "	37x5	4400 "
38x5	4300 "	37x5½	5100 "

Here it is seen that the larger equipment resulted in an increase in the carrying capacity of the car of nearly 25 per cent.

Again, consider the standard car equipments. It is regrettable, but none the less a fact, that some car manufacturers are inclined to place tires of too small size on their cars when they are sent out from the factory. The table below presents data taken from four American-made pleasure cars noted for their poor tire service, the names of the cars in question being designated by letters. The third column gives the capacities with the tire equipment as ordinarily supplied, while the last column indicates the capacity which would be realized by the adoption of oversized tires on the same rims.

Car.	Tire size.	Car weight.	Tire capacity.	Oversize.
A	32x3½	2335 lbs.	1800 lbs.	2900 lbs.
B	36x4	3456 "	3200 "	3900 "
C	36x4½	4100 "	3800 "	4400 "
D	37x5	4675 "	4400 "	5200 "

These figures require no further proof of the advantages gained by the adoption of tires of adequate size.

It should be remembered, however, that an oversized tire does not take care of abuse and overspeeding. With pneumatic tires it is found that a car which averages 20 miles per hour and never exceeds 30, will realize fair service even with undersized tires. Such a car often runs 4000 miles on one set of tires, but by running within the above speed limits on oversized tires the same car should give at least 5000 miles of service. In exceptional cases, a set of oversized tires has been known to give a mileage almost double that of the old equipment.

THE PASSING OF THE STEEL TIRE

All motor vehicles in Germany must in future be equipped with rubber tires, and France and England are expected to follow with similar legislation. This will greatly increase the demand for rubber tires, as many, especially of the commercial motor vehicles, are still running on wood-block, spring and other tires, which are highly detrimental to road surfaces.

RUBBER TRADE IN BOSTON.

Much business is being done in all lines of business. However, there are exceptions, and the

enjoying a lively demand which, in more cases than one, has caused the producers some trouble to keep pace with the wants of their customers. The tire business seems excellent for this time of the year, which is in many respects regarded as the quiet season. While some factories are making up stock for spring delivery or in anticipation of the demand that will certainly be year, others claim to have enough to keep their

manufacturers would have larger orders than more favorable for retail trade, but the increase in the call for tennis lines and the demand for rubber shoes help to make business good for the factories which are turning their attention to these lines. Mechanical goods go moderately, and druggists' goods manufacturers are not com-

The Goodyear Tire & Rubber Co. has opened its new store and offices near the Fenway Park baseball grounds. This section is fast being appropriated by automobile warerooms, tire manufacturers' agencies and supply stores. Commonwealth avenue,

has been almost entirely built up between Beacon street and

motor accessories. The Goodyear company occupies a fine building at 61 Brookline avenue but a short distance from the junction of Beacon street and Commonwealth avenue. Thus another leading house has deserted the Bowdoin street automobile district, which has been in a turmoil of confusion for months owing to the building of the new subway.

* * *

last month, when Harvard and Yale met in the stadium. The Enterprise Rubber Co., equal to the occasion, filled one of its big show windows with a football display which was the talk of the town. The floor of the window was marked off like a regular "gridiron." Two teams of players faced each other, the ball on the central line. The players were red rubber toy dolls about six inches high. One set had crimson ribbons across their breasts, the other similarly designated by blue ribbons. Harvard

also a dwarf player. With this as a central attraction, the rest of the window was appropriately filled. There were lay figures, lifesize, of a man and woman, at each side, one couple displaying the crimson, the other the blue. There were football shoes, footballs, warm overcoats and windproof coats to complete the advertising effectiveness of the window.

* * *

and shoes, is now running a night shift, to keep abreast of the demand. Consequently started in a small way, under the direction reached 35 hands and the night force 20 hands. The sole, which is known as the "Duck-Box," is made of shredded leather and rubber, well mixed and firmly vulcanized together. This sole, it is claimed, will wear longer than either a leather or a rubber

enjoy a good trade. The company makes a sole with double-wear. Brockton is the exclusive right to this specialty. The company has

shifts at work regularly for

Christmas is coming, and many lines of business which do not naturally gain much by the holiday trade, because of the staple character of their product, are endeavoring to catch some of the flying dollars by giving a holiday touch to their goods. Some



Rubber Co. made a dainty little rubber boot, gracefully curved at the top, with pebbled leg, bright finish and a pink fleece lining. Each pair was packed in a substantial pasteboard box, covered with paper embellished with holly leaves and berries. A handsome card, appropriately worded and illuminated, was also enclosed.

About the same time, the Hood Rub-

little red-top leather boot for children, got out a red-top rubber boot for Christ-

short boot, except that it had a band of red fabric about four inches wide at the top. Like the Apsley boots, these were sent to the trade in Christmas souvenir boxes.

The latest, however, is a combination made for the Duck Brand



tains should be attractive to the active boy or girl who isn't afraid of wet weather. The illustration shows a youngster clothed in the outfit, while a duplicate set is shown with the box in which it comes from the factory.

* * *

The Rubber Tire Bowling League, which has been so successful in former years, starts out for a busy season. The league has transferred its activities to the Adams Square alleys, contiguous to the automobile district, where eight teams are able to contend at one time. Contests are booked for every Friday night. The league officers are: Fred Dougherty, of the Lee Tire Co., president; A. L. Cherry, secretary; P. L.

"It was a real estate deal which brought rubber to Akron," continued Mr. Holton. "Dr. Goodrich was in the real estate business in New York. In one of his trades back in the '70's he got possession of a little rubber factory which was not making money. After trying to interest New York people in the factory he came to Akron, where he installed his machinery, and started a business under the name of the Akron Rubber Co. I think it was in 1881 when he reorganized, with Col. Perkins and George W. Crouse as the principal backers. It was then that the company took the name B. F. Goodrich Co.

"At that time I had a little rubber accessory shop in New York. In 1885 Dr. Goodrich brought me out here and placed me in charge of the accessory department. I remained with the company until 1900. When I came here, we didn't do as much business in a year as the Goodrich now does in one day. The industry braced up after bicycles became popular in the '90's and other companies started. Then came the automobile and with it more and more uses for rubber."

* * *

Rubber common stocks which have for some time been inactive, displayed some life during the past few days. Late quotations are as follows:

	Bid.	Asked.
Firestone preferred	102	103¼
Goodyear preferred	96½	97
Miller		125
Swinehart	78½	80¼
Goodrich common	18½	19½
Goodrich preferred	81	82

Ralph Upson and R. A. D. Preston, the Akron boys who gained world-wide fame by winning the International Balloon Race out of Paris, October 14, arrived in Akron on the 22nd in time for the big home-coming celebration planned in their honor on the afternoon of that day. In order to reach here on time they were obliged to cable the Aero Club of America headquarters in New York to cancel the dinner and reception arranged in their honor on the night of the 21st. The monster balloon "Goodyear" in which they won the sensational air race arrived in Akron on the 18th. The reception in their honor was held at the Court House. There was a patriotic program, with band music, speeches and singing. One of the features was the presentation of loving cups to the young aeronauts.

CANADIAN COMMERCE IN RUBBER GOODS.

The following table shows statistics of rubber exports and imports of Canada for the first six months of the years 1912 and 1913:

IMPORTS.		
	1912.	1913.
India rubber, gutta percha, and manufactures of	\$5,157,256	\$6,117,846
Elastic, round or flat, including garter elastic	93,147	75,042
EXPORTS.		
India rubber, gutta percha, and manufactures of	223,593	474,084

"What does this nation need?" shouted the impassioned orator. "What does this nation require, if she steps proudly across the Pacific, if she strides boldly across the mighty ocean in her march of trade and freedom? I repeat, what does she need?"

"Rubber boots," suggested the grossly materialistic person in a rear seat.—*Kansas City Star*.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

BUSINESS has not as yet started upon its winter activity, hence not much change is noted since last report. Altho Thanksgiving is past and gone, Chicago, much to the discouragement of the rubber industry generally, and especially of the boot and shoe trade, is enjoying an Indian summer.

In the mechanical rubber line the slackness has not been so marked as in some of the others. The demand for rubber belting has been considerably better than at this time last year, which is attributed to the large number of grain elevators now being erected in the West and in Canada. In Iowa, Nebraska and Kansas the farmers' co-operative elevator movement is growing every day, and while most of the elevators being erected are of small capacity, in the aggregate the amount of rubber belting required is enormous. The large crops which have been garnered during the past few years in these States also necessitate increased facilities for handling the surplus, and consequently a large number of new elevators, some of them big ones, have been built by private and line companies. The headquarters of many of these latter are located in Chicago, and for that reason these companies are inclined to buy fixtures for the new elevators here in the city, a tendency which local rubber belting houses are constantly doing the most in their power to stimulate by the personal solicitation of salesmen.

On the other hand, the rubber belting business has received a decided blow from two quarters. One of these is in the northern Michigan copper region, which has during the past few weeks been the scene of a number of desperate strikes, featured by pitched battles between miners and militia. The mine owners have been more stubborn than usual in coming to an agreement with the men, claiming that the conditions under which they were working in the mines were better than usually prevail in such places. The peace which has been arranged is more in the nature of a truce than anything else, and those who have made a study of the situation—including a number of Chicago rubber belting manufacturers—declare that hostilities are certain to break out again after the first of the year. Of course during all this trouble the mine operators have not been placing orders for rubber belting, packing or any of the other lines handled by mechanical rubber dealers, of which they formerly ordered to the extent of many thousands of dollars at this time of year. The loss from this source is a matter of great concern to dealers here, and they are hoping for an immediate and permanent adjustment of the trouble. The other quarter from which the rubber belting business has received a blow is northern Mexico, where unsettled conditions have played havoc with the great copper mines. With federals and insurgents trying to make sieves of the hillsides and of each other, and tearing up railroad tracks whenever they can muster enough energy, these mines have been compelled to curtail operation, or shut down altogether, which latter course has been followed in many instances. These concerns, which are in most cases owned by Northern capital, formerly sent in large orders at this time of the year, but now little or no business is being received from them. The only considerable order received from this region during the past month was by the Gutta Percha & Rubber Co., 301 West Randolph street, from the Cananea Consolidated Copper Co., Cananea, Mexico, for rubber belting aggregating several thousand feet.

The druggists' sundry business is fairly good at the present time.

Two facts have conspired to make the tire business dull—mainly the season, and an expected change in price.

* * *

Rubber overshoes and boots have been very active in the local market during the past month, all dealers in these lines reporting a most satisfactory demand. Raincoats are also experiencing the usual seasonable demand and are being offered at such low prices in the windows along South State and in Van Buren streets

that passers-by are tempted to purchase whether they are in immediate need or not. On rainy days rain coats are well advertised in the newspapers, and some of the more enterprising merchants have even gone to the extent of getting out attractive dodgers which they hire small boys to distribute to the "loop" crowds during the noon hour. One dealer recently startled the public and sold out his stock on short notice by installing a shower bath in his window and stationing beneath it his pretty daughter, clad in nothing but one of his latest model raincoats. The police were at last compelled to stop the spectacle, owing to the crowd, which blockaded the street, but not until the dealer had disposed of a stock which had been a white elephant on his hands for several months.

Thus it will be seen that there are still a few new things under the sun, which thought should give pessimistic rubber men who are trying to figure out new ways of stimulating business increased courage and steadfastness of purpose.

The tire men ought to be interested in the better road system which is in store for outlying Chicago districts. Thirteen States, according to the compilation of Dr. E. S. Whitlin, assistant in social legislation in Columbia University and chairman of the executive committee of the National Committee on Prison Labor, have passed laws during the present year allowing the use of convicts in the construction and repair of highways. Illinois is one of the thirteen States. In addition, the Cook county board contemplate the voting of a good round sum to road improvement.

* * *

Tire men are well represented among the list of new members taken into the Chicago Automobile Club during its recent successful membership campaign. The object of the club has been to product greater activity in the automobile trade. During the last two years it has successfully promoted the Elgin road races and the interclub reliability tours, and preparations are being made for even a greater scope of activity for next summer.

* * *

Several of the dealers interviewed said that they thought business would improve as soon as some definite legislation was made in the matter of currency reform. Under the present system of procrastination in this regard, with the bankers of the West playing safe until they see what is going to happen, money has become tight at a time when it ought to be easy. This does not affect the rubber dealers themselves directly, but the great concerns which they sell are in a way to become embarrassed by this condition, and for that reason are inclined to purchase at this time only what they are compelled to have. There seems to be a lack of confidence in the administration. The new tariff has had but little effect on the local market, as imported goods cut but a small figure here.

A. Romain, of the Quaker City Rubber Co., announced that his concern had been experiencing a satisfactory trade, with the single exception of automobile tires.

The Gutta Percha & Rubber Co. said that business for the past few weeks had been better than usual at this time of the year. The biggest order of the month which went out from the Chicago branch was shipped to the Girard Point Elevator of the Pennsylvania Railroad, located at Philadelphia. This order consisted of rubber belting, and totaled more than 9,000 feet, which included a single belt 1400 feet in length.

John Mills, manager of The New York Belting & Packing Co., declared that he did not think there was as much mill building this fall as last year, but said that prospects for the spring in this line were shaping up in a most satisfactory manner. He reported that the demand for most of the mechanical rubber lines was good; better, in fact, than for several weeks past.

F. B. Henderson, of the Mechanical Rubber Co., stopped dictating a letter long enough to announce that he had been in the

game twenty-five years, and had come to believe that the periods of dullness in the rubber business were never of long duration.

"For that reason," he said, "I predict that the present slack period will soon end, possibly before and certainly after the first of the year. In the rubber business it has been my experience that there are never any periods of hilarious prosperity or disastrous slackness. The trade has a pretty even tone, with few fluctuations one way or the other. Of course, certain lines may experience sudden heavy demand or sudden dearth, but I speak of the rubber business in the aggregate."

According to Mr. George G. Bryant, general manager of the Chicago Rubber Clothing Co., the season is proving extraordinarily good.

The Reinsburg Auto Tire & Supply Co., dealers for years in new and used tires, has opened up a new line. This is now the only company in the United States, outside of the factories, that repairs solid tires for electrics. Previously, all tires had to go back to the factory for repair. Heretofore there has always been a certain reluctance about establishing this as an independent business. A full line of new machinery is demanded, and it was felt that factory competition would be too strong. On the contrary. Mr. Reinsburg reports many orders from the branches of large tire manufactories, which find it a more profitable and time-saving process to have their repairing done in Chicago.

For twelve years the W. F. Salisbury Co. has represented the Electric Hose & Rubber Co. of Bloomington, Delaware; but recently a radical change has been made. The Salisbury Co. is now manufacturing a new line of hose of its own brand, an undertaking which is proving a great success.

Mr. J. E. Duffy, manager of the Thermoid Rubber Co., has just returned from a business trip to Denver.

Mr. R. B. Tracy, Western manager for the Michelin Tire Co., is now on a business trip in Minneapolis in the interests of the firm.

The Empire Rubber & Tire Co., 1305 South Michigan avenue, will occupy its new addition at 1627 South Michigan avenue, about the middle of November.

The Auto Tire Brokerage Co. reports a rushing mail order business. The first of December, the manager, Mr. F. W. Potts, will leave for a two months' pleasure trip in California.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE rubber factories throughout this State continue to be operated at capacity, and at several of the plants new buildings or additions have recently been constructed. From all sections it is reported that present shipments are greatly in excess of all previous movements. Generally speaking, there has been no diminution in the number and size of orders received, and to meet the demand several of the plants have recently started additional machinery on the night shifts.

* * *

Factories that produce boots, shoes and other footwear are still enjoying the busiest season that they have experienced for several years, according to the reports, and there is apparently no prospect of immediate slackening. Factories that are making tires and other rubber fittings and accessories for automobiles are likewise running to their fullest capacity with accumulating orders ahead.

* * *

The close association between the affairs of the Walpole Tire & Rubber Co., Consumers' Rubber Co., and the suspended Atlantic National Bank of this city is responsible for the keen interest that is manifested in business circles here in anything that pertains to either of the three. The proceedings of the Federal Grand Jury in indicting the former president of the

bank and three promoters of New York and Mexico were closely watched, as it was rumored that other officials of the bank were also to be indicted. The suspension of a Lowell bank in which Alva Baldwin, of the Walpole Rubber Co., also a director of the Atlantic bank, was largely interested, made another connecting link in the chain of affairs. The report of the Walpole company's receivers will be found elsewhere in this number.

* * *

Colonel Samuel P. Colt, president of the United States Rubber Co., is to spend the winter in New York, and has closed his Bristol residence, "Linden Place," this month. It is stated that Colonel Colt intends making a visit next spring to Java and Sumatra, for the purpose of looking over large rubber interests recently acquired. In a letter received a few days ago by Lewis Herreshoff, of Bristol, from his cousin, Thomas Prentiss, of Batavia, the latter writes: "If Brazil doesn't take a brace, Java and Sumatra will soon be passing her in the amount of raw gum exported for use in the rubber industry."

"Colonel Colt's rubber proposition in Sumatra is by all accounts a wonderful one," writes Mr. Prentiss. "He has been very fortunate in picking out winners to work for him, and therein lies the success of the whole undertaking."

* * *

The business at the Davol Rubber Co., Point street, this city, is rapidly expanding, and the concern has recently been calling for a large number of girls over 16 years of age for steady employment in the several departments.

* * *

Extensive improvements have been going on at the plant of the National India Rubber Co., on Wood street, Bristol, for several months, and some big changes have been made there. It is understood that others are under contemplation, including the pulling down of the old carpenter shop, a wooden structure, as well as all other wooden buildings on the property, and replacing them with stone buildings. The management is also considering the erection of another extensive addition to the wire plant. This branch of the business has grown to great proportions during the last few years, and the present indications are that the capacity will be doubled in a short time. It is planned to change the time of taking the annual inventory at this factory from the spring to the last week of the year.

* * *

The Woonsocket Rubber Co. has just received permission from the authorities of that city to erect an addition to its mills there. Work will begin at once. The new addition to the plant of the Alice Rubber Mill at Woonsocket is practically complete, and the placing of the machinery has already commenced. Business is reported as having been unusually good during the entire year, and the new addition has been badly needed for some time to keep pace with the orders.

* * *

The recent shipments of the International Rubber Co. of West Barrington are said to have been the largest in the history of the concern. The departments are being operated on full time and there is every promise of a continuance of rush work during the winter.

* * *

The petition of Charles H. Graves, president of the Invincible Tire Co., at 53 Sabin street, this city, for the appointment of a receiver of that concern was heard before Presiding Justice Tanner in the Superior Court for Providence county recently, and Arthur A. Thomas, an attorney, was appointed as permanent receiver of the corporation, with a bond of \$5,000.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

DURING the past two weeks there has been an unusual fall of rain, sufficient to make up for the previous shortage, and more than ample to surpass the total rainfall up to the same time last year. This condition has started the rubber clothing lines so that they are now exceptionally active, a condition most pleasing to the heads of these departments.

The big building on the corner of Fremont and Mission streets, formerly occupied by the Studebaker Co., is now being equipped to accommodate the Western offices of the B. F. Goodrich Co. and the Diamond Rubber Co. The present quarters of the B. F. Goodrich Co., at No. 345 Market street, are to be leased. There will be some reduction in the size of the force of employes, but in the main it is intended to continue the business of both establishments along the old lines, each firm looking after its own customers.

* * *

The Roblito Rubber Plantation Co. has been incorporated with its principal place of business in San Francisco, with a capital stock of \$600,000. The incorporators are G. Scalmanini, L. A. Carter, E. L. Fischer, J. Cassarelto, and O. M. Goldaracena.

The Panama-Pacific International Exposition Co. has placed an order with the American Rubber Manufacturing Co. for 10,000 ft. of cotton rubber fire hose.

* * *

The Hendrie Rubber Co. is now successfully operating its automobile tire factory at Torrence, California, and the owners are satisfied that they can compete with Eastern tires. This company has established a branch in San Francisco, placing Mr. E. Milburn in charge as sales manager. Mr. Milburn states that already his factory is able to manufacture forty-four tires per day, and by the first of the year they expect to be turning out at least a hundred a day. Not only is the tire a California product, but also all the cotton used in the fabric, this being grown in the now famous cotton-growing belt of the Imperial Valley, and worked into shape for use in tires in California cotton mills. Mr. Milburn is satisfied with the showing so far made by his selling force. This State is second only to New York in the use of automobiles, and there is a great demand for tires, and as his factory is able to produce a tire which compares favorably with Eastern lines there is no reason why he should not do well in open competition.

The breaking of ground for the factory of the Panama Rubber Co. at Compton, California, was marked by quite a celebration, the day having been declared a holiday, and the ceremony, witnessed by 3,000 persons, being presided over by the mayor and Mr. W. D. Newerf, president of the company. The factory building will cost about \$125,000, and the industry will no doubt be a valuable aid to the community.

Arthur W. Savage, president of the Savage Tire Co., also the maker of the Savage firearms, was a recent visitor in this city. His tire factory is a comparatively new venture, and is located at San Diego. The tire is distributed in this territory by Baker & Hamilton.

The Playa Vicente Rubber Co. has been incorporated at Tucson, Arizona, with \$500,000 capital stock. The incorporators are: J. A. Pritchard, W. V. Olschewski, M. Christman, H. L. Rothschild and I. M. Golden, all of San Francisco.

The Pasadena Rubber Co. has been incorporated at Pasadena, California, by A. R. Riley, F. B. and Nellie L. Cole, with a capital stock of \$10,000.

The B. F. Wade Tire & Rubber Co. has been incorporated at Los Angeles.

A tire factory is soon to be established at Port Mann, British

Columbia, by a company headed by F. M. Gates of Portland, Oregon, in a building to be erected for that purpose.

The Keaton Vulcanizing Works have recently secured a court decree changing their name to the Keaton Tire & Rubber Co.

W. H. Bell, manager of the San Francisco branch of the Firestone Tire & Rubber Co., has returned from his visit to the annual sales convention held at Akron.

O. M. Clark, of Seattle, has been appointed chief clerk of the Spokane branch of the Goodyear Tire & Rubber Co., a vacancy created by the promotion of Decatur Lea to the position of adjuster and counter salesman.

C. A. Muller has been appointed distributor and adjuster for the United States Tire Co. of California, newly organized to take over the Gorham-Revere Rubber Co. and the Pacific Coast interests of the United States Tire Co. Mr. Muller will represent the firm in Alameda and Contra Costa counties through his stores at Oakland and Berkeley.

A. T. Smith, formerly connected with the Chicago branch of the Firestone Tire & Rubber Co., where his work has been highly commended, has been appointed manager of the Los Angeles branch of that company, to succeed R. D. Barr, killed in an automobile accident in July.

N. S. Dodge, of the American Rubber Manufacturing Co., has moved his offices from the factory at Emeryville to Mission street, San Francisco, where the main offices and salesrooms are located.

F. M. Steers, of the Pacific Mill & Mine Supply Co., is now on a Northern trip on business for the company.

George Hand, formerly employed with the Gorham Revere Rubber Co., has accepted a position with the Diamond Rubber Co.

THE UNITED STATES RUBBER CO.'S NEW STOCK ISSUE.

ON November 6 a circular was sent out by the United States Rubber Co. to its stockholders announcing a new issue of first preferred, 8 per cent. stock, to the amount of \$9,422,000, which represents an increase of 10 per cent. over the present outstanding stock, each stockholder being offered the privilege of subscribing for one share of the new stock for every ten of either preferred or common now held. The letter is given below:

UNITED STATES RUBBER CO.

1790 BROADWAY,

NEW YORK, November 19, 1913.

TO THE STOCKHOLDERS OF THE UNITED STATES RUBBER CO.:

Recent outlays in enlargements of plants and on the company's plantations in Sumatra and in connection with the expansion of the company's business and the desirability of providing therefor without increase of funded debt, have led your directors to offer to our stockholders for subscription at par \$9,422,000 of our 8 per cent. first preferred stock, this being equivalent to ten per cent. of the present outstanding capital stock, thus giving to each stockholder the privilege of subscribing at par for one share of first preferred stock for every ten shares of stock whether preferred or common held by him.

Under this plan the stockholders will receive the full benefit of the issue without payment or allowance of any commission or other like expense.

For the fiscal year to October 1, 1913, the business of the company both in volume and profits, has been fully equal to the business for the corresponding period of 1912—the business of which year both in volume and profits exceeded that of any year in the history of the company—which fact your directors regard as most gratifying and promising.

It is confidently expected that before long our extensive plantations in Sumatra will provide the company with sufficient crude rubber to meet a substantial part of its requirements at actual cost of production, and that its rapidly expanding development department will lead to important economies in the utilization of the crude material and in manufacturing methods. Moreover, with the outlays being made, the company's plants will be in condition to take care of the increased business which

it is believed lower prices for crude rubber will stimulate. To meet these developments through the co-operation of our stockholders by an increase in capital stock seems to your directors a wise and conservative move at this time.

Subscription rights will apply to stockholders of record at the close of business on Friday, November 14, 1913, and, as soon as may be after that date, warrants will be mailed to all stockholders, viz.: Assignable subscription warrants to all holders of ten shares or of any multiple thereof and warrants for fractional rights of subscription, expressed in tenths, to holders of less than ten shares or of shares in excess of ten shares but aggregating less than ten shares in excess of a multiple of ten shares, such fractional warrants in appropriate amounts to be exchangeable for subscription warrants on or before December 15, 1913.

All subscriptions will be payable at par, in cash or New York funds, on or before December 15, 1913, and certificates of stock will be issued as soon thereafter as practicable.

SAMUEL P. COLT, President.

On November 19 the warrants were mailed to the stockholders of record of November 14, together with a second circular letter from the president, which was as follows:

UNITED STATES RUBBER CO.

1790 BROADWAY,

NEW YORK, November 19, 1913.

TO THE STOCKHOLDERS OF THE UNITED STATES RUBBER CO.:

In sending to our stockholders warrants in accordance with our circular letter of November 6—in view of inquiries received from stockholders and in order to avoid misunderstanding—your president thinks it well to state that in his opinion the present offering of \$9,422,000 first preferred stock to our stockholders at par should have no injurious effect upon future dividends upon either the preferred or common stock of the company, and for the following reasons:

FIRST—If all stockholders avail of their privilege to take their ratable shares of the new stock at par, the company will receive and will have the future benefit of the full proceeds therefrom, without diminution for commissions or otherwise, namely \$9,422,000. The 8 per cent. dividend upon this sum amounts to \$753,760 a year, while the same sum if borrowed at 6 per cent. would cost the company \$565,320, a difference of \$188,440, which difference is paid pro rata to the stockholders subscribing. As last year, before paying interest and dividends, the net earnings of the company were \$9,509,193.30, it is manifest that this increase of \$188,440 is relatively immaterial in its bearing upon dividends.

SECOND—Furthermore, in the opinion of your president, the purposes for which this money will be used will result in increasing the revenue of the company far beyond the 8 per cent. dividend thereon.

Should the privilege offered our stockholders of subscribing not be availed of by all, the stock remaining, having once been so offered, may by the directors be otherwise disposed of at the same or a higher price than that at which it is now offered to stockholders.

SAMUEL P. COLT, President.

KEEPING TABS ON TIRES.

Corporations using a large number of trucks equipped with rubber tires have found it much to their advantage to keep an accurate record of the service secured from the tires. The New York Edison Co., which uses a great many service trucks, employs a system which enables it to tell with extreme accuracy just how every tire purchased by the company performs. It has a double card system, one card devoted to each individual tire and the other card devoted to each vehicle. In addition to this, there is a daily report that summarizes the whole tire service. The card devoted to the tire gives the tire number (each tire when purchased is numbered by the company, the number appearing on a metal plate fastened to the spoke of the wheel, where it cannot be effaced by wear), records the maker's name, the type of vehicle on which it is used, the maker's serial number, the date purchased, the date on which its use begins, the position on the vehicle, date when removed, cause of removal, the mileage, and number of days in service—besides general remarks.

OBITUARY RECORD.

EBEN BLAKE PAGE.

EBBEN BLAKE PAGE, treasurer of the Hub Gore Makers, died in Winchester, Massachusetts, on October 28, in his seventy-seventh year. Mr. Page had been prominent in Boston business circles for over half a century. Besides being connected with the Hub Gore Makers, he was for a quarter of a century one of the directors of The Rubber Manufacturers' Mutual Insurance Co., whose officers, at the time of his death, paid a tribute to his memory in an appreciation and resolutions signed by the president and secretary, which are given below:

"Mr. Page, at the time of his death, was in his twenty-fifth year of service as a member of the board of directors of the Rubber Manufacturers' Mutual Insurance Co. The last two years of this time he was its vice-president and a member of the Finance Committee. He was also a director in the Cotton and Woolen and the Industrial Mutual Insurance Companies. His record of service with these allied companies is an honorable and helpful record.

"Mr. Page came to Boston from Connecticut in his early manhood and his business life since has been here. At the time of his coming Boston was a comparatively small city. Since then the city's growth, the increase in capital and the improved methods in business make a wonderful story. But with him it was not a story, but an experience. He was in it and a part of it, and words but feebly tell of the moving—pressing—alert activities of a busy life in this city in the last sixty years. Mr. Page showed to the world a cheerful and genial side, but he took his responsibilities seriously. He held his honor sacred.

"He was Episcopalian in his religious associations, a personal friend of the late Bishop Phillips Brooks, and his eldest son, Rev. Herman K. Page, D. D., is rector of St. Paul's Episcopal Church in Chicago. His only other son, John E. Page, has been his reliable aid in his business here. Both are able and worthy sons of an honorable father and a Christian home.

"RESOLVED: That this estimate of the life and character of Eben Blake Page, for many years a director and officer of the Rubber Manufacturers' Mutual Insurance Company, be written in the records of this company as a tribute to his memory, and that a copy of the same be sent to his family with expressions of our sympathy for them in their bereavement."

COUNTESS DE ALMEIDA.

All of these who were connected with the Fourth International Rubber Exposition, held in New York, will be shocked to learn of the death of Countess Candido Mendes de Almeida, the wife of Count Almeida, who was president of the Brazilian Commission and had charge of their wonderful rubber exhibit. The Count and the Countess not only met most of the important visitors at the exposition, but visited rubber centers throughout America and made a host of friends.

DR. CHARLES MCBURNEY

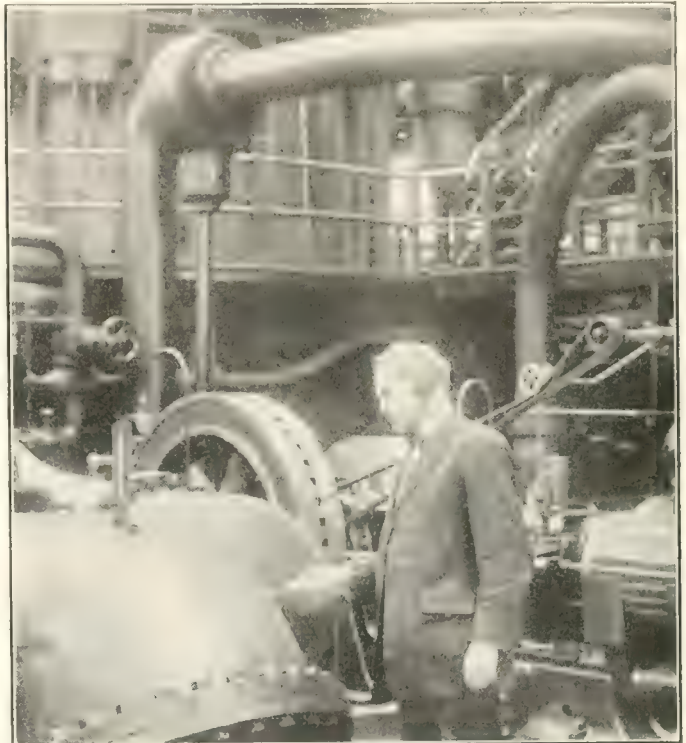
Dr. Charles McBurney, the famous New York surgeon who died November 7, at the home of his sister in Brookline, Massachusetts, was a son of Charles McBurney, one of the founders of the Boston Belting Co. Dr. McBurney graduated from Harvard in 1866, and from the College of Physicians and Surgeons in 1870, and immediately thereafter took a leading place among the surgeons of the United States. He held many positions in connection with the larger New York hospitals, and was a member of many medical associations on both sides of the Atlantic.

The November number of "R-u-b-b-e-r" published by the Beacon Falls Rubber Shoe Co., of Beacon Falls, Connecticut, has a very appropriate cover showing a large and corpulent turkey with a background of tall trees and crimson sky. The number contains the usual interesting matter on various phases of rubber shoe selling, and is illustrated by reproductions of some of the most popular Beacon Falls shoes. It is a small publication in size and goes easily into one's pocket, so that the retailer who gets it is very likely to carry it home with him, and peruse it after the lamp and his pipe are lighted.

THE DETECTORPHONE FOR LOCATING MACHINE TROUBLES.

ONE of the greatest expenses in connection with the repairing of machinery, where the exact trouble is not known, is the location of the defect. This is particularly so in locating leaks in a pipe line or determining what part of a machine is loose when a knock occurs. Science has produced an electrical device called the "Detectorphone," by means of which a leak or mechanical trouble may be located within a few minutes. A more descriptive name for this instrument would be the "Mechanical Stethoscope."

The illustration shows an inspector using the instrument in the Boston plant of the Edison Electric Illuminating Co. When a knock makes itself evident in a machine and the exact location



HUNTING MECHANICAL TROUBLE WITH THE DETECTORPHONE.

of the trouble is not known, the operator places the point of the instrument on different parts of the machine frame, cylinder, or other part where the trouble is likely to be found. At the point where the instrument indicates the loudest noise, the operator may be sure that he has located the trouble. The vibration of the machine is transmitted to the receiver, and there made audible by a slight buzzing sound. Any irregularity which may be inaudible to the unaided ear can thus be instantly detected in the receiver. The device consists of a sensitive microphone and a six-inch dry cell inclosed in a metal cylinder, a telephone receiver and two metal rods. One of these rods is screwed into the front of the instrument until it engages the diaphragm of the microphone. In this instrument rubber plays the part common to telephone and similar apparatus. [Boston Talking Machine Co., 41 West Street, Boston.]

Ordinarily the running board of an automobile is finished with a brass edge. This adds to its appearance and also serves as a protection to the wood. But of course the brass edge is rather slippery, a condition which has its disadvantages at times. So a London company has brought out a foot-board with a brass edge having a groove in which a tubular strip of rubber is inserted—just enough rubber to keep the foot from slipping.

William Appleton Lawrence.

THE guayule shrub had been known to contain rubber almost from the time of Goodyear. It was not, however, until a New York chemist-engineer-inventor, William A. Lawrence, took hold of the extraction problem in earnest that it was solved. His success is briefly outlined in the following sketch:

Mr. Lawrence, a manufacturing chemist for more than forty years, had been located for twenty-five years at Waterville, New York. He was a member of the firm of Whiting & Lawrence, who extracted hops, using gasoline as the solvent. In connection with this work, he invented a process for the refining of gasoline into rhigoline and had the process patented. This process came to the notice of the Standard Oil Co., as the firm of Whiting & Lawrence was then the largest consumers of gasoline in the country. They therefore sent their head chemist, Dr. Saybolt, to Waterville, where he remained with Mr. Lawrence for two weeks to examine the rhigoline process. Very naturally, then, when the promoters of a proposition to extract rubber from guayule shrub went to Dr. Saybolt in search of a chemist who could give them the clearest report on the process proposed, he advised them to consult Mr. Lawrence, particularly as this was a gasoline process.

At this time Mr. E. B. Aldrich had been entrusted with the whole management of the affairs of this proposed extraction of rubber from guayule. Mr. Aldrich called Mr. Lawrence to New York and induced him to enter upon a series of experiments of extraction by gasoline which would give a reliable idea as to the value of the process. At the end of six months of constant labor on this process, Mr. Lawrence reported positively against the use of gasoline. He at the same time, however, reported some merit in another process (alkaline), called to his attention by Mr. Aldrich, and it was while experimenting on this that Mr. Lawrence discovered the process which is now almost exclusively used; namely, the process of "rubbing and pressure in the presence of water." This process was patented and assigned to the Continental Rubber Co. of New York, organized to use the process, and Mr. E. B. Aldrich was made president and Mr. W. A. Lawrence vice-president, the latter retiring from his hop extract business to become actively interested in the extraction of rubber from guayule.

It is interesting to note that the first work done by Mr. Lawrence on guayule rubber was as early as July, 1901, and from then until July 8, 1902, continual work and experimenting was going on. About that time he found that after grinding up the shrub in water, a fiber of rubber was formed, and this fact convinced him that there was no need of a chemical process, that the rubber could be extracted simply by rubbing in the presence of water. Mr. Lawrence, in a temporary laboratory at his home in Jamaica, Long Island, and with the assistance of his daughter—herself a chemist—made a small pebble mill out of a glass fruit

jar, using pebbles from the street and grinding the shrub in a small coffee mill. They thus secured some small particles of rubber. They also found that rubbing (reciprocal) the ground shrub between two rough surfaces produced the same result. The inventor immediately patented this process and afterward assigned it to the Continental Rubber Co.

During the early part of 1903 Mr. Lawrence, together with Mr. Aldrich, spent months in Mexico, exploring the country to make sure of the shrub supply. When they found sufficient to make the proposition a commercial enterprise, a small manufactory was established in New York, where a regulation-sized pebble mill could be operated. This worked successfully, and in August, 1903, The Continental Rubber Co. was organized. The desire of the company now was to produce enough extracted guayule rubber to try it out commercially. In February, 1904, the late Captain F. H. Hunicke was engaged, and, after doing some work in New York in preparation, went to Mexico with Mr. Lawrence and Mr. Aldrich to look the ground over for a factory. It was not until 1905, however, that a small factory was established in Torreon. Here was produced enough rubber to have the quality thoroughly tried out by rubber manufacturers. This proof that guayule rubber was of commercial value greatly encouraged the Continental Rubber Co., and at once Captain Hunicke's ability was displayed in the erection of a monster plant at Torreon.

In making guayule a merchantable article, Mr. Lawrence gives credit to a number of people—to Mr. Aldrich for the pioneer work and the financing of the project; to Captain Hunicke, who did yeoman's service in Mexico in the early work of production and the erection of a factory with a capacity of over a million pounds of

rubber a month; to D. A. Cutler, the first chemist to give guayule rubber credit for its real commercial value; to the Manhattan Rubber Manufacturing Co., the first rubber company to recognize its value in the connection with the manufacture of mechanical goods. With all of his modesty, however, he is bound to admit that the mechanical process that successfully separated the rubber from the fiber was his own invention. The success of the first Lawrence patent stimulated invention so much that in Mexico alone hundreds of processes and machines were registered. Among the inventors were a half score of Mexicans, among them being Enrique and Salvador Madero. Of Americans there were: E. B. Aldrich, F. H. Hunicke, A. H. Marks, F. C. Hood, R. A. Leigh, Ferdinand Ephraim, and others. Europe also added its quota in the patents granted to Adolphe Marx, E. Delafond, Guillermo Prampolini, Fernand Tivier, and others. Of the dozen factories projected under various processes, none was as important as the Continental, nor any method of extraction equal in simplicity and efficiency to the Lawrence process.



WILLIAM APPLETON LAWRENCE

Besides the pebble mill process cited above, Mr. Lawrence patented a dozen or more machines and processes both for extraction and deresination. Today at eighty he is still active, still interested in rubber, and still at work experimenting and inventing.

PERSONAL MENTION.

At a meeting of the board of directors of the United States Rubber Co., held November 6, Mr. Nicholas F. Brady was elected a member of the executive committee, to fill the vacancy caused by the death of his father, the late Anthony N. Brady.

Mr. J. Simao da Costa, of Rio de Janeiro, and one of the best-known rubber men in all South America, has been elected a member of the board of directors of the Goodyear Tire & Rubber Co. of South America.

Mr. Algot Lange, explorer along the upper tributaries of the Amazon, author of the book, "In the Amazon Jungle," and lecturer on South American topics at the International Rubber Show held in New York last fall, has been engaged to deliver a series of lectures on Brazil at the International Rubber Show to be held in London next June.

Mr. John Hopewell, one of the proprietors of the Reading Rubber Mills of Reading, Massachusetts, gave his neighbors and fellow club members an unusual entertainment on November 1, when he invited them to an old-fashioned New England dinner, held in the new barn just finished on his estate in Newton. The table, decorated with vegetables and autumn leaves, was set between two long rows of cow stalls. The toastmaster regulated the events of the evening with a particularly large cow bell, and the speeches, given by some of the best-known wits around Boston, had to do with such farm subjects as "Melons, and How to Cut Them."

E. F. Thompson, formerly a department manager for the Motz Tire & Rubber Co. at Akron, has been promoted to the position of sales manager.

Dr. Saylor, former vice-president of the Goodyear Tire & Rubber Co., Limited, of Canada, has been given charge of the business of this concern in Great Britain and on the Continent, and headquarters for the handling of this extensive trade are to be established by him in London.

H. B. Beattie has established at 719 North Broad street, Philadelphia, a firm known as H. B. Beattie & Co., for the sale of automobile tires of all kinds and of accessories. Previous to engaging in this enterprise Mr. Beattie was connected with the L. S. Hall Rubber Co., also of Philadelphia.

R. P. Dowse, lately representing the Goodyear Tire & Rubber Co. from headquarters at Akron, and previously with the Detroit branch of that company, has been transferred to the territory east of Buffalo.

Herbert L. Severance, well known in both tire and automobile selling fields, has been appointed sales manager of the Racine Rubber Co. of Racine, Wisconsin.

John V. Harding, for some time past in charge of the Detroit branch of the Motz Tire & Rubber Co., is to extend his field of operations in the interest of this company to cover the whole of the United States.

Mr. C. B. McKay, who for many years has been in Manáos, connected with the rubber importing house of Adelbert H. Alden, Limited, has accepted a position with an important American rubber manufacturing company. His plan is to leave Manáos shortly and spend the winter visiting the islands of the Caribbean and some of the countries on the mainland, such as Costa Rica, arriving in New York in the spring.

E. L. Dale, formerly employed as a salesman by the Mishawaka Woolen Mfg. Co., manufacturers of rubber footwear, has gone into the automobile business at Anna, Illinois.

The Brazilian congress at Rio de Janeiro has voted a special appropriation of 1,500 contos of reis—equal to \$813,000 gold—to be used at the San Diego and San Francisco expositions in 1915, the two expositions to share equally. This means that the Brazilian Tropical Products Exhibition, with its great rubber adjunct and its out-of-door *Hevea* plantation, with \$400,000 to expend upon it, will be a very notable and unique exposition.

Mr. Warren Trumbull, president of the Gutta Percha and Rubber, Limited, Toronto, Canada, was a recent visitor to New York.

MR. STEARNS WITH THE CONVERSE COMPANY.

Mr. Edgar G. Stearns, who for nearly twenty years represented the United States Rubber Co. in Chicago and the middle west, leaving that company two years ago to become associated with the Banner Rubber Co. of St. Louis, has recently taken the management of the Chicago agency of the Converse Rubber Co. at 323 Jackson Boulevard, west.

MR. ARMSTRONG GOES TO BOSTON.

The Loewenthal Co., of New York, announce that in order to keep in closer touch with their New England trade Mr. H. G. Armstrong—who has been connected with their selling department for several years—is now located in Boston, his headquarters for the present being at the warehouse recently opened by the company at 246 Second street, Chelsea. Before going with the Loewenthal Co. Mr. Armstrong was associated for a number of years with the selling department of the United States Rubber Co., and is very well known in the rubber trade both east and west. There are quite a good many exceedingly high grade people in Boston, and Mr. Armstrong will add one to that number.

MR. A. B. GEORGE RESIGNS.

Mr. A. B. George has resigned the position which he has held for many years as president and treasurer of the Des Moines Rubber Co., his resignation to take effect December 31 next. He will be succeeded by Mr. T. J. Needham as president, and Mr. A. D. Skinner as treasurer—men well qualified with long experience in rubber salesmanship to conduct the affairs of this company successfully. Mr. George built up a very substantial business in Des Moines many years ago and has maintained it, and added to it year after year by his industry, good judgment and personal popularity.

THE RUBBER RECLAIMERS DINE

The Rubber Reclaimers' Club held its annual meeting on November 6 at the Belmont, New York. Mr. F. H. Appleton, of F. H. Appleton & Son, Boston, was re-elected president, the other officers elected being: Treasurer, Mr. R. W. Seabury, Boonton Rubber Manufacturing Co., Boonton, New Jersey, and secretary, Mr. J. A. Norman, New York Rubber Reclaiming Co., New York. The meeting was followed by an elaborate luncheon at the hotel, which was greatly enjoyed by the members of the club.

DIVIDENDS.

A regular annual cash dividend of 12 per cent. has been paid by the Goodyear Tire & Rubber Co. on common stock of record on November 1.

The Hood Rubber Co. paid on November 1 a regular quarterly dividend of 1¼ per cent. on its preferred stock of record on October 31.

The directors of the Boston Woven Hose & Rubber Co. have declared a semi-annual dividend of \$3.00 per share on the preferred stock, and a quarterly dividend of \$3.00 per share on the common stock, both payable December 15, 1913, to stockholders of record December 5, 1913.

The exports of tires from the United States for the first eight months of 1913 amounted to \$2,922,200, an increase of \$681,374 over the corresponding period of 1912. The tire exports for August were valued at \$377,031, a decrease of \$28,750 from the August, 1912, exports.

News of the American Rubber Trade.

THE REPUBLIC RUBBER CO. IN NEW YORK

THE Republic Rubber Co., of Youngstown, Ohio, announces that it has acquired control of the Republic Rubber Co. of New York, formerly owned and managed by New York people. The new organization, keeping the same location, 229 West Fifty-Eighth street, will carry a complete line of tires and mechanical rubber goods manufactured by the Republic company. Mr. F. G. Hill, secretary and sales manager of the old company, will continue in the same capacity in the new organization, and have charge of all tire sales. Mr. C. W. Hardin, formerly eastern manager of the Republic Rubber Co., has been elected vice-president and treasurer of the new organization, and will have charge of all the mechanical sales. These changes denote increased business at this important point, and also mean even better service for New York users of Republic tires.

THE NEW HARTFORD COOLING PLANT.

The Hartford Rubber Works are installing a complete plant for cooling the water used in the mill room. This application of the principle of refrigeration to maintain a low temperature in the rolls of rubber machinery is both novel and interesting. The cost of installation, tho great, will be saved many times over through the economies peculiar to the new system, while the benefit to the rubber stock will be incalculable. Another valuable feature showing a deep interest in the welfare of the operations will be plenty of cool and absolutely pure drinking water for the employees.

INTERCONTINENTAL RETIRES ITS PREFERRED STOCK.

At a special meeting of the stockholders of the Intercontinental Rubber Co., held November 11, it was voted to decrease the capital stock by retiring the \$1,250,000 par value of preferred stock remaining issued and outstanding. The stock and stock trust certificates representing same will be retired on December 1, 1913. This will leave the preferred stock authorized \$5,800,000, with none outstanding, and common stock authorized \$30,000,000 with \$29,030,000 outstanding. After effecting this retirement of preferred stock the company will have about \$1,500,000 in cash, and cash invested in securities other than those of its subsidiary companies; so there will be ample cash resources for future operation.

CONTRACTS AWARDED FOR FIRE HOSE.

The Eureka Fire Hose Co., of New York, has recently been awarded contracts to supply 2,000 feet of fire hose to the town of Pine Bluff, Arkansas, and to the town of Pekin, Illinois, 500 feet of "Keystone" hose. The New Jersey Car Spring & Rubber Co. has secured an award from the town of Chippewa Falls, Wisconsin, for 500 feet of fire hose.

THE ANGLO-AMERICAN RUBBER CORPORATION.

The Anglo-American Rubber Corporation is a newly organized company with a capital of \$75,000, which will commence operation in Brooklyn on December 1. The new company will make rubber clothing, drug sundries, hospital sheetings and auto top fabrics. The officers are R. F. Rubens, president; George L. Fox, treasurer, and F. B. Daniells, secretary. The rubber clothing department will be in charge of F. B. Daniells, while Joseph Holland, formerly with the Goodyear Tire & Rubber Co., Akron, Ohio, Davol Rubber Co. at Providence, Rhode Island, and other well-known concerns, will have charge of the druggist sundries department.

The rubber clothing will be made under a special process, and

with an especially prepared cement, which will be guaranteed to prevent the opening of seams and oxidation. The plant is located in the Bush Terminal Building, Brooklyn.

A NEW FACTORY FOR MULCONROY COMPANY

The Mulconroy Co., of Philadelphia, patentees and manufacturers of a flexible metallic hose, also of rubber boots, belting, packing and mechanical rubber goods, have secured the building formerly occupied by the Munyon Home Remedy Co. at 53rd and Jefferson streets, that city, affording them considerable additional manufacturing space. This is a three-story building, 150 x 250 feet, on the main line of the Pennsylvania Railroad, opposite the 52d street station, and within two blocks of the Pennsylvania freight station and express companies, with a siding to the factory. It is within fifteen minutes of the center of the city, with car service every quarter of an hour, so that the company will hereafter be excellently situated to take care of both the manufacture and distribution of its products.

FURTHER ADDITIONS TO FEDERAL CO.'S PLANT.

Altho the present plant of the Federal Rubber Manufacturing Co. at Cudahy, Wisconsin, contains 300,000 square feet of floor space, turns out 1,000 pneumatic tires a day, in addition to a variety of mechanical rubber goods, and affords employment to 1,000 persons, this capacity has been found inadequate to take care of the steadily increasing business of the company, and still further additions have been started. In December, 1912, this company issued \$1,000,000 additional capital stock, its previous capitalization having been \$1,000,000.

SUMMIT RUBBER CO. INCREASE.

The Summit Rubber Co. of Barberton, Ohio, has found it necessary to increase its capital stock from \$50,000 to \$100,000, and it is stated that present conditions indicate the necessity of adding to the capacity of the plant in the early spring. This company manufactures drug sundries and rubber coated rust-proof corset stays and intends to add to its output in the near future some new patented articles for which it has already contracted. Its present factory building is 75 x 90 feet, two stories high, with an additional storage building.

ASBESTOS & RUBBER WORKS OF NEW JERSEY.

All the assets, liabilities, and contracts, the good-will and factory of the Asbestos & Rubber Works of America have been taken over by the Asbestos & Rubber Works of New Jersey, which was duly incorporated under the laws of the State of New Jersey on November 6. The officers of this company are: John H. Scudder (president of the First National Bank of Trenton), president; Joseph A. Whitney, secretary; John M. Scudder, treasurer.

TRADE NEWS NOTES.

Work has been begun on a one-story addition to the plant of the Vulcanized Products Co. at Muskegon, Michigan. This new building is to be 100 x 150 feet, and will be used as a press room.

The Loewenthal Co., of New York, has assigned Mr. M. S. Schulman to take exclusive charge of the Trenton district in order to give proper service to their customers among the mills of that section. Mr. Schulman has been associated with the Loewenthal Co. for several years, and has had much experience in the scrap rubber line.

The Automobile Tire Co. opened two new branches last month—one in Washington, D. C., and one in Fresno, California. They now have six branches besides their main office on Broadway, New York. They deal exclusively in automobile tires.

THE PATTERSON RUBBER CO.

This is a reproduction of the new mill room of the Patterson Rubber Co., situated in Lowell. The president of this company is Mr. John S. Patterson, who was for many years connected with the Revere Rubber Co., and he has associated with him Mr. F. H. Appleton, the widely known dealer in reclaimed rubber, of Boston. Before locating the plant at Lowell, Mr. Appleton corresponded with nearly 300 boards of trade located in New England, and Lowell was finally selected as offering the most favorable



MILL ROOM AT PATTERSON RUBBER CO.

location, all things considered, for the new factory. The land—nearly nine acres—was purchased in September, 1912. This was followed by a contract for a factory 260 by 65 feet, four stories in height and a boiler house 65 by 100 feet, two stories in height. Building was started in the fall of 1912, and was fully completed in May, 1913. Modern machinery was rapidly installed, and the factory opened for business on May 25, starting with the employment of 400 men, its total capacity being 1,000 men.

CONSOLIDATED RUBBER TIRE CO.

Application has been made to list the securities of the Consolidated Rubber Tire Co. on the Stock Exchange at Cleveland, Ohio. The Kelly-Springfield Tire Co. and the Buckeye Rubber Co. are subsidiaries of this concern, whose outstanding securities are placed at \$8,000,000, of which common stock represents \$4,000,000, preferred stock \$1,149,500 and income debentures \$2,850,500. This company's securities have for some time been listed on the New York Curb.

THE NATIONAL REGISTRATION LEAGUE DINES.

The members of the National Registration League and many of their friends interested in the general subject of copyright and the protection of trade-marks and designs, met for a dinner on the afternoon of November 21 at the Hotel Astor, New York. There were a number of well-known speakers, the principal subject discussed being the new Kahn law, referred to at some length editorially in the November issue of this publication.

A LIZARD IN THE RUBBER

Upon opening up a consignment of rubber lately received from Ceylon, employees of the Mansfield Tire & Rubber Co., of Mansfield, Ohio, were somewhat startled to discover a live lizard, about 10 inches long, which had evidently come all the way from that island, having been packed in with the rubber. Fortunately it proved to be a specimen of a harmless variety.

WATCHING THE TARIFF BEFORE EXPANDING.

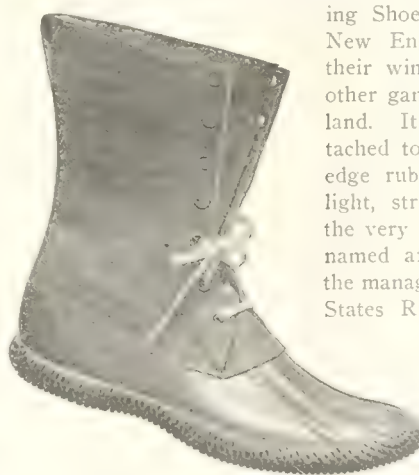
The Howe Rubber Co., of New Brunswick, New Jersey, which had planned to increase its plant by the addition of a sizable tire department, has concluded not to do so at the present time, but rather to wait until next spring, in order to see what effect the new tariff on tires will have on the trade. The company's attorney wrote to the common council of the city as follows: "The directors of the company deem it advisable, in view of the new tariff law reducing the schedule from 35 to 10 per cent. on tires, to await further action in respect to the purchase of the proposed site until spring, so as to ascertain to what extent foreign manufacturers have invaded this market and the effect it may have on current prices."

A NATIONAL ASSOCIATION OF PURCHASING AGENTS.

An organization was formed in New York City in October called the National Association of Purchasing Agents. It began with over 100 members, representing many large industrial corporations, railroads, steamship lines and electrical companies, and the membership has increased quite rapidly during its month of existence. The temporary chairman is H. T. Leeming, of Thomas A. Edison, Inc., and the temporary secretary and treasurer—who was also the organizer of the association—is Elwood B. Hendricks, connected for a number of years with Hendricks' Commercial Register. The association will be devoted to the interests of purchasing agents and buyers and has for its object mutual acquaintance, exchange of ideas, standardization of purchasing methods, investigation of new appliances and materials, methods for diffusion of market information, standardizing of specifications and other features which will be beneficial to the average purchasing agent. Inquiries should be addressed to the secretary, E. B. Hendricks, P. O. Box 1406, New York City.

THE BARKER HUNTING SHOE.

Here is a photographic illustration of the famous Barker Hunt-



ing Shoe, worn by thousands of New England sportsmen during their winter visits to Maine and other game sections of New England. It has a leather top, attached to a ribbed, low heel, roll edge rubber over. This shoe is light, strong, and waterproof to the very top. Incidentally, it was named after Mr. W. E. Barker, the manager of sales of the United States Rubber Co. It is distributed in large quantities by the Enterprise Rubber Co. of Boston, of which W. L. Proctor is the general manager.

SEALING TREATMENT FOR HEALING PUNCTURES.

Among the various articles on the market for the prevention and cure of punctures in pneumatic tires is a composition known as Rubberstone. This substance is put up in cans in a semi-liquid form and is injected into the inner tube. When a puncture occurs and the obstruction is withdrawn, the air in the tube forces a very small quantity of the Rubberstone into the hole and closes it immediately, so that the pressure in the tire is not reduced. The tube is not filled with the substance, but only enough is introduced to cover the inner surface. It not only seals the inner tube, but closes the hole in the casing as well, congealing as soon as it comes in contact with the outer air; but it does not stick the tube and casing together. [Buffalo Specialty Co., Buffalo, New York.]

TRADE NEWS NOTES.

The Braender Rubber & Tire Co. is adding to its plant on Paterson avenue, Rutherford, New Jersey, work having been started on a new factory building.

Baker & Hamilton, of San Francisco, have recently been given the agency for the new Savage tire in northern California.

Contracts to furnish supplies for forty-one motor-trucks recently purchased by the government for use in various cities in the parcel post service, for the remainder of the fiscal year ending June 30, 1914, have recently been awarded to the B. F. Goodrich Co., Motz Tire & Rubber Co., and the United States Tire Co.

The Easyride Tire Filler Co., formerly located in New Orleans, has removed to 123 Locust street, St. Louis Missouri, where headquarters have been established for the sale of its new tire-filling material known as "Easyride."

Reports on a test of fire hose recently purchased by the city of Davenport, Iowa, from the Manhattan Rubber Manufacturing Co., of Passaic, New Jersey, indicate an excellent showing for this company's product. In this test, made before fire commissioner, chiefs, etc., the hose is said to have stretched only 50 inches in 50 feet, which is 14 inches less than the allowance by fire underwriters' regulations.

The cost and inconvenience of the necessary frequent replacing of planks in the promenade at Atlantic City has led to a decision on the part of the city rulers to cover certain sections of the walk with a preparation of rubber, and, this experiment showing satisfactory results, to extend its use over the entire length of the promenade.

A new company has been formed in Canada for the manufacture of rubber tires. It has been incorporated with a capital stock of \$40,000, under the name of The Michelin Tire Co. of Canada, Limited, Montreal, the list of incorporators including A. E. Woodworth and A. B. Wright.

The Northland Rubber Co., with J. Clark Milson as general manager, has opened salesrooms at 1239 Main street, Buffalo, New York.

A tire factory is soon to be erected at Macon, Georgia, for the Southern Tire & Rubber Co., which, when completed, will be operated under the management of H. Dech.

The Ford Motor Co. is to establish an agency at Buenos Aires in South America, with the E. H. Hampton Co. of that place.

The Walpole Tire & Rubber Co.'s salesroom, recently removed from Boston to Cambridge, will again be established in the former city upon the completion of a building now under course of erection more favorably located and arranged to meet the requirements of the tire business.

The Progressive Tire Co., Limited, with headquarters at 137 Church street, Toronto, Ontario, has secured a Canadian agency for Ajax tires.

At a meeting of directors of the Alliance Rubber Co., held at the company's office at Alliance, Ohio, on November 1, it was decided to call a meeting of stockholders for December 1 to consider a \$50,000 increase in capitalization over the present \$100,000 capital stock.

A new brake lining known as "Bestbestos" is being introduced by the Federal Asbestos Co., of Paterson, New Jersey. This is made of closely woven asbestos and is said to be unaffected by oil, gasoline, grease or acid.

Contracts have been awarded by the Consolidated Rubber Co., of Calgary, Alberta, for the erection of a five-story warehouse, to be built of reinforced concrete, at an estimated cost of \$100,000.

The New England Cable Co. has been organized at Lowell, Massachusetts, with D. J. Macdougall, president, and Samuel Dunsford, treasurer and general manager, for the manufacture

of cables for electrical purposes, etc. Mr. Dunsford was formerly very prominently identified with the Lowell Insulated Wire Co., and has had long experience in this line of manufacture.

THE STANDARD WOVEN FABRIC CO.'S NEW PLANT.

THE Standard Woven Fabric Co. is now located in its new factory at South Framingham, Massachusetts. Its expansion started three years ago when the present management bought out the Multiple Woven Hose & Rubber Co., manufacturers of fire hose and belting. After this reorganization the new company



Standard Woven Fabric Co. South Framingham, Mass.

begin rapidly to extend its lines in the manufacture of friction materials and woven mechanical fabrics of every kind.

Perhaps the best known of the company's products are its "Bi-Moore" and "Solid Multiple" grades of hose fabric. The "Bi-Moore" is a two-ply fabric, both jackets being woven and bound together on the loom at a single operation. The two jackets are secured together for a part only of their circumference, leaving hinged sections at opposite sides of the fabric. This feature affords lightness and flexibility and maximum resistance to water pressure. The "Solid Multiple" grade of fabric is similar in weave and form to the "Bi-Moore" grade. Its chief point of difference is that its two jackets are bound together with binding warps throughout their entire circumference.

All of the machinery which has been installed in the new plant is of the most modern and advanced type. It is particularly interesting to note that every one of the machines in the weave room was made in its own machine shop under design and direction of Mr. E. E. Waite, the factory manager, and under patents held by the company. Special machines and processes for the treatment of the finished fabric are also provided.

The building itself is of fireproof construction and of the type known as "the daylight factory" with a great expanse of window space. The foundations, floors and columns are reinforced concrete and the walls are brick. Power is furnished by the Boston Edison Illuminating Co., while the heating is looked after by a Robb-Brady Scotch boiler of 150 h. p. Connected with the boiler is a Sturtevant-Carrier system which insures a uniform temperature and humidity in the building the year round.

With such a thoroughly modern equipment the company will doubtless be able not only to increase its production, but to maintain high standards of quality and service.

The officers of the company are George D. Moore, president; W. B. McSkimmon, vice-president; T. J. Daley, secretary; A. H. Burdick, treasurer and general manager, and E. E. Waite, factory manager.

Much of the new equipment has been paid for out of the company's earnings, altho additional preferred stock for more than \$100,000 has been issued in this connection. The authorized capital of the corporation is \$400,000. All of the stock which has been issued so far has been sold privately and is held by men connected with the active management.

REPORT OF THE WALPOLE RECEIVERS.

The co-receivers of the Walpole Tire & Rubber Co., Robert C. Fisher and Robert O. Harris, issued on November 2 a general balance sheet as of August 2, 1913, showing a deficit of \$977,205.66. A brief summary is given below:

ASSETS.

Invested assets	\$2,311,462
Current assets	847,343
Deferred assets	126,818
Contingent assets	276,679
Deficit	977,205
Total assets	\$4,539,507

LIABILITIES.

Preferred stock outstanding.....	\$1,801,300
Common stock outstanding.....	1,500,000
Coupon notes	50,933
Current liabilities	907,595
Deferred liabilities	3,000
Contingent liabilities	276,679
Total liabilities	\$4,539,507

The invested assets include:

Real estate, construction, machinery and factory equipment, at Walpole	\$839,164.83
Machinery, factory equipment and building improvements in Foxboro	110,349.56
Capital stock in subsidiary companies.....	500,000.00
Patents, trade-marks and good will.....	841,998.05

Current assets include:

Accounts receivable	240,344.44
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Contingent assets include:

Notes receivable, discounted at banks.....	250,698.61
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NEW INCORPORATIONS.

The Alhambra Rubber Co., October 30, 1913, under the laws of Massachusetts; authorized capital, \$10,000. Incorporators: Arthur Webb, 46 Grant street; Thomas J. Glennon, 10 Green street, and Frederick W. Fitzsimmons, 45 Jefferson street—all of Milford, Massachusetts. To manufacture and deal in all goods, merchandise, etc., of which rubber is wholly or in part a component.

Asbestos and Rubber Works of New Jersey, November 6, 1913, under the laws of New Jersey; authorized capital, \$50,000. Incorporators: John H. Scudder and John M. Scudder—both of Trenton, New Jersey—and Joseph A. Whitney, Merchantville, New Jersey. To manufacture, purchase, and sell all kinds of products of rubber, etc., and particularly to acquire the business now carried on by the Asbestos and Rubber Works of America, Camden, New Jersey.

Auto Tire Brokerage Co., October 25, 1913, under the laws of Kentucky; authorized capital, \$5,000. Incorporators: Allen L. McCormick, Charles L. Halden, and S. Barry, all of Louisville, Kentucky. To buy and sell old and new auto tires and accessories.

Doherty Tire Co., October 8, 1913, under the laws of Maine; authorized capital, \$2,000,000. Incorporators: T. L. Croteau, Albert A. Richards, and B. M. Maxwell, all of Portland, Maine. To manufacture, produce, buy, sell, and otherwise deal in all kinds of tires, rubber, rubber goods, etc.

East Rochester Packing Co., Inc., November 15, 1913; under the laws of New York; authorized capital, \$25,000. Incorporators: W. Duane Smith, 370 Fiftieth street, Brooklyn, New York; Arthur T. Jones and Charles Lebrecht, both of Palmyra, New

York. Location of principal office, East Rochester, New York. To manufacture asbestos and rubber packing for engines.

Endurance Tire & Rubber Co., October 3, 1913, under the laws of Massachusetts; authorized capital, \$3,000. Incorporators: Wilson G. H. Randolph, 464 Riverside Drive; John H. Cooper, 165 West Eighty-third street—both of New York—and John H. Hamilton, Wollaston, Massachusetts. To manufacture and deal in all kinds of automobile tires, accessories, and rubber goods of every kind, etc.

E. H. Garcin & Co., Inc., October 29, 1913, under the laws of New York; authorized capital, \$25,000. Incorporators: Edward H. Garcin, 30 West Fifty-ninth street; George E. Richards, 501 West One Hundred and Seventy-sixth street, and George S. Fulton, 1 Liberty street—all of New York. Location of principal office, New York. To manufacture and deal in asbestos and rubber goods and products.

The Goodyear Co., Inc., November 17, 1913, under the laws of New York; authorized capital, \$10,000. Incorporators: Elihu J. Zwilling, Norman J. Jacobs, and John A. O'Rourke—all of 346 Broadway, New York. Location of principal office, New York. To deal in rubber goods, etc.

Leather Tire Goods Co., Inc., November 6, 1913, under the laws of New York; authorized capital, \$7,000. Incorporators: Hans Gurlitt, 1608 Broadway; H. V. Dodge and William Loebmann, both of 1610 Broadway, New York. Location of principal office, New York. To deal in automobile specialties, tires, etc.

The Michigan Tire Co., October 1, 1913, under the laws of Michigan; authorized capital, \$20,000. Incorporators: Jacob Steketee, Beth Long, and Folmer W. Kehlet—all of Grand Rapids, Michigan. To buy and sell at wholesale and retail automobile tires and accessories.

New York Tire Filler Co., September 26, 1913; under the laws of Texas; authorized capital, \$20,000. Incorporators: Hugh E. Prather, W. E. Wilkins, and J. J. Eckford. To buy and sell rubber tire filling for automobile wheels, pneumatic tires, etc.

Patent Rubber Co., Inc., November 21, 1913; under the laws of New York; authorized capital, \$50,000. Incorporators: William N. Croxton, 1123 Broadway, New York; J. George Metz, 4286 Park avenue, New York, and Charles L. Brockheim, Riverview Manor, Hastings-on-Hudson, New York. Location of principal office, New York. To manufacture tires and rubber goods.

Schick Wheel & Tire Co., July 7, 1913; under the laws of West Virginia; authorized capital, \$150,000. Incorporators: Adolph Schick, J. E. Morgan and D. H. Taylor—all of Wheeling, West Virginia.

Blowers Rheubottom Rubber Co., November 13, 1913; under the laws of Delaware; authorized capital, \$500,000. Incorporators: W. R. Blowers, Toronto, Canada; Allen Rheubottom, Pittsburgh, Pennsylvania, and George D. Hopkins, Wilmington, Delaware. Location of principal office, Delaware Charter Guarantee & Trust Co., Du Pont Building, Wilmington, Delaware. To manufacture and sell automobile tires, tubes, and rubber goods of all kinds.

B. F. Wade Tire & Rubber Co., October 14, 1913; under the laws of California; authorized capital, \$50,000. Incorporators: B. F. Wade, Charles E. Crozier, and Helen Newman—all of Los Angeles, California. To carry on a general rubber business along automobile lines, and for all uses of rubber.

Westchester Raincoat Co. of Mount Vernon, Inc., November 17, 1913; under the laws of New York. Incorporators: Michael Waill, 462 South Fourth avenue; Harry Miller, 118 West First street, and Abraham Subotky, 18 South Eighth avenue—all of Mount Vernon, New York. Location of principal office, Mount Vernon, New York.

TRADE NEWS NOTES.

The Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, announces the removal of its New England branch from 261 Dartmouth street, Boston, to a permanent location in the company's own new building at 173 Massachusetts avenue, that city. A complete stock of Federal tires, tire accessories, horse shoe pads and mechanical rubber goods will be carried at this address, where commodious show and stock rooms have been provided, with facilities for prompt attention to orders.

The formation of a company is being considered for the continuation of the business of The Xenia Rubber Manufacturing Co. of Xenia, Ohio, in the manufacture of tires of all kinds, mechanical rubber goods, etc. The new company will probably be incorporated during February, 1914, and \$60,000 is given as the amount of its capitalization.

The Fairfield Rubber Co., which recently installed electricity in part of the plant at Fairfield, Connecticut, and replaced some of the old machinery with other of later and improved design, is now adding to its equipment a new set of boilers, besides having contracted for a one-story 45 x 75 feet brick addition to the plant. The company expects also to make further important changes in the spring.

The Endurance Tire & Rubber Co. of New Brunswick, New Jersey (with general offices at 1789 Broadway, New York), has recently opened a branch at 1514 Michigan avenue, Chicago, in charge of A. W. Shattuck, in addition to the one mentioned in our November number, located at 755 Boylston street, Boston, in charge of John L. Hamilton.

The Plymouth Rubber Co., Canton, Massachusetts, instead of equipping each mill and calender with safety stops, has put electrically operated friction clutches at the drive end of each main shaft. A cord from each clutch runs over each machine in easy reach of the operator. The driver works quickly and is said never to be out of commission.

A new building has been added to the plant of the Plymouth Rubber Co., at Canton Junction, Massachusetts, for the manufacture of leatherette. The product is used by shoe, novelty, upholstery and automobile manufacturers, and is called "Plymouth Leather."

The trust agreement, under which the stock of The Boston Woven Hose & Rubber Co. has been held for the shareholders by trustees, which terminated on November 2 last, was, by a vote of the stockholders, extended for another five years, continuing until November 2, 1918.

The new factory of the Double Fabric Tire Co., at Auburn, Indiana, is now nearing completion. The main building is 84 x 140 feet, and so designed that it can readily be added to when occasion requires. It is built of brick, full mill construction, is equipped with sprinkler system, and has a vacuum plant. A 36 x 40 foot two-story building is also being added to the boiler die rooms, and Birmingham 60-inch calender, 40-inch mills and a washer are being installed.

The El Paso Rubber Vulcanizing & Auto Supply Co., Incorporated August 12, this year, at El Paso, Texas, with a capital of \$10,000, by C. M. Morse, W. Morse, and C. F. Fowser, succeeds the El Paso Rubber & Auto Supply Co., first established in 1908 under the name of the El Paso Rubber Co. The purpose of this recent incorporation is to prevent the use by other companies similarly engaged in the automobile supply and accessory business of the names under which this concern has been operating.

The Eureka Resilient Wheel Co. has been incorporated at Ludlow, Kentucky, with a capital of \$10,000 for the manufacture of a patented automobile wheel. The principal incorporators are G. A. Simpson, of Ludlow, and Charles Schroeder, of Cincinnati, Ohio.

Mahlow & Wyckhoff, manufacturers of hard rubber negatives and soft rubber molds, have recently removed from 325 South Warren street, Trenton, New Jersey, to Brunswick avenue, and East Trenton Railroad, in the same city.

The "Thermoid 100 per cent. Perfect Brake Lining," made by the Thermoid Rubber Co., of Trenton, New Jersey, is now used by twenty-six of the popular motor cars of the United States and Europe.

THE HARTFORD RUBBER PLANTATION

Many rubber manufacturers here and abroad own rubber plantations situated somewhere in the tropics. It remains, however, for the Hartford Rubber Works to install their own plantation right in the factory. In the warm, light boiler room there are growing today healthy specimens of the *Hevea Brasiliensis*, *Castilloa Elastica*, and the *Ficus Elastica*. So far, these trees have



RUBBER PLANTATION OF THE HARTFORD RUBBER WORKS CO.

not been tapped, and will not be until a new tapping device projected by Mr. Whittlesey is completed.

Confidentially, the device is to be a cutting-knife attached to a vacuum extractor which will draw the latex as far as the mill room, coagulate it over the mixing mills, and automatically feed it into the rolls for massing.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory for 1914.

A CUSHION TIRE FOR MOTOR TRUCKS

AFTER considerable experimenting on the part of the manufacturers, a solid rubber cushion truck tire has been produced with the intention of meeting the adverse conditions under which motor trucks are operated. This same type of tire has been used on electric pleasure cars for several years past, and

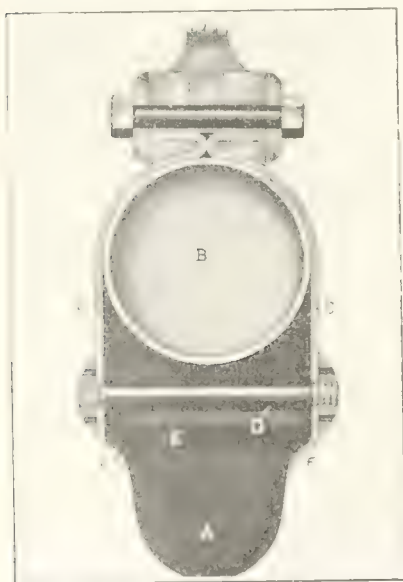


THE NEW MOTZ CUSHION TIRE FOR TRUCKS

its adoption for truck use is expected to partially relieve the detrimental effects caused by the shock vibrations resulting from solid-tire equipment. In design, this type follows closely the construction of the pleasure car type, being constructed with under-cut sides which form slanting bridge. Each tire has a dual tread with a single base, and two tires may be mounted on a single wheel as shown in the cut. Extending on the inner side of each tread at regular intervals are perpendicular indentations to prevent skidding. This non-skid feature, it is claimed, will remain effective until the tire yields its guarantee mileage, which is for 10,000 miles, or for one year. [Motz Tire & Rubber Co., Akron, Ohio.]

PUNCTURE-PROOF PNEUMATIC TIRE.

A tire embodying the ordinary inner tube feature of the usual type and yet laying claim to being absolutely puncture proof, has been recently placed on the market. In the illustration, *A*

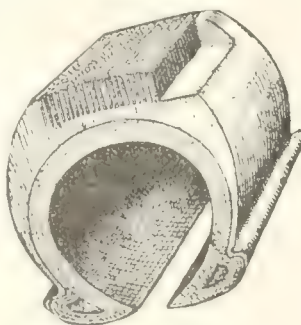


represents the flexible rubber tread which is made all in one piece. *B* is an ordinary inner tube as used in most pneumatic tires. The outer tread *A* surrounds the inner tube *B* and both are held in place by the steel rims *C*. These rims are made from vanadium steel and are held to the felloe of the wheel by a quick-demountable device. They are held together by bolts *D* which pass through steel lined openings or slots *E* in the tread. These openings are made wider than the bolts, as shown, in order to allow for the radial

movement of the tire as it strikes obstructions in the road. Shoulders *F* *F* are provided on the tread, against which the steel rims set, thus preventing the air pressure from forcing the tread outwardly beyond a certain point. This feature makes it impossible to throw the tire off the rim. [Detroit Pneumatic Tire Co., Detroit, Michigan.]

RUBBER TIRE WITH RESILIENT STEEL TREAD.

Few, if any, rubber tires have been designed that have taken the place of the pneumatic in all respects, for, with all its inherent faults, it still has obvious advantages. One of its defects



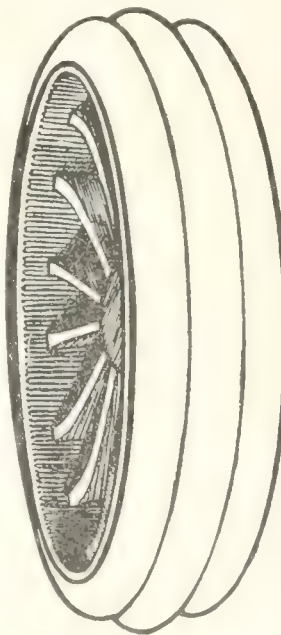
PNEUMATIC TIRE WITH RESILIENT STEEL TREAD.

is the rapid wearing out of the tread, thus exposing the fabric and making the inner tube subject to blow-outs. Many treads of various compositions have been devised for protecting the tire, but the drawing herewith shows a tire with an entirely new kind of tread. This tire, which is known as the "Stelastatic," has a tread of a composite nature, combining numerous small steel springs with the rubber of the tread. The steel spirals are vulcanized in a vertical position and are placed so close together that they form a protection against wear as well as against punctures and side-slip. It is reported that in a recent test of a set of these tires by the Royal Automobile Club of London, 20,000 miles was covered without a cut, puncture, or blow-out. [Hunts, Limited, 117 Long Acre, London, W. C.]

A NON-SKID TRIPLE SOLID RUBBER TIRE.

The ordinary solid rubber truck tire is usually of such homogeneous and solid construction that it lacks sufficient resiliency to relieve the machine of the heavier road shocks. Fire engines, for instance, must travel

at high speed, regardless of the condition of the road, whether it be rough or smooth and slippery. The truck tire illustrated shows a new triple solid rubber band tire, which is said to add much to the resiliency and to provide safety against skidding.



THE MACINTOSH TRIPLE TIRE.

The two outer tires are of the usual solid gray rubber, while the center tire is a special soft and resilient red rubber and of a slightly larger diameter so that it stands up above the others. This combination of hard and soft rubber is said to give a resiliency hitherto unattained by the solid rubber band tire, and to secure a perfect grip on the road surface. These tires, which are made under the Coleman patent, have been adopted by the London fire brigade. [Charles Macintosh & Co., Manchester, England.]

DOMINION "NOBBY" TIRES.

The manufacture of Dominion "Nobby" tires has just been begun in the new factory of the Dominion Tire Co., Limited, situated at Berlin, Ontario, a very complete description of which, with illustration, was given in THE INDIA RUBBER WORLD of February last, when building operations began. Some idea of its size may be obtained from the fact that more than 800 tons of reinforced steel have been used in its construction, and approximately 40,000 feet of steel sash have gone into the windows. This new plant represents in its construction and equipment the combined and accumulated experience and knowledge of some of the largest rubber factories in the United States. The Dominion people express themselves with great confidence that this is "the finest tire factory in the world."

New Rubber Goods in the Market.

THE APSLEY "TANGO."

WHEN our forefathers and our foremothers used to dance the stately minuet they never dreamed that their descendants would some day go over the dancing floor with such rapidity, with so many leaps and so many dips and



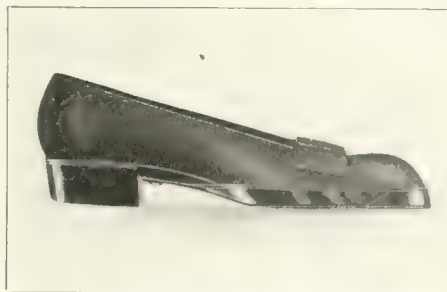
THE WOMEN'S "TANGO" RUBBER.

so many other swift and sudden movements, that they would have to wear rubbers in order to keep their feet. But all this has come about. In place of the stately minuet and the innocuous Virginia reel, everybody now is dancing the Tango, or something else equally

full of motion. Just how long these dances will remain popular cannot be prophesied, but probably for some time, their popularity appearing to increase nightly.

The shoemakers have cudged their brains to provide the best sort of footwear to meet the new conditions. Some have inserted a rubber

patch in the toe, and some in the center of the sole; but here comes the Apsley Rubber Co. with the "Tango" rubber that appears to meet the situation admirably. It is invisible and almost imponderable. When put



THE MEN'S "TANGO" RUBBER.

on the dancing pump it is unobserved, and as each rubber weighs but an ounce its weight is not a serious consideration. It has a very light rubber sole with just enough upper to catch on the edge of the leather sole. The sole runs up under the arch of the foot, where a little metal socket fits over a metal button that has previously been pressed into the arch of the leather shoe. These Tangos can be put on when required and put back in the pocket when not required. This is no theoretical shoe, as it has been thoroughly tested on the dance floor. The Apsley company expects a very large sale on these shoes this season, and assuming that society continues to cherish the Tango, their expectations will undoubtedly be realized. [Apsley Rubber Co., Hudson, Massachusetts.]

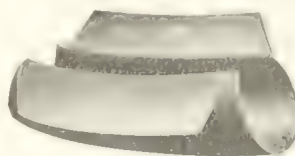
THE GOODYEAR CO.'S FLEXIBLE METALLIC HOSE.

In setting forth its claim to superiority over ordinary varieties of metallic hose and those made of rubber alone, the Goodyear Tire & Rubber Co. calls attention to the extreme flexibility of its "Kantkink" metallic hose, its durability and resistance to high pressure. This hose is provided with an interlocking metallic casing which completely surrounds the inside regular hose tube and which, while protecting the latter from destructive kinks, in no way detracts from its adaptability. The inner tube sustains the pressure, and it is asserted that an amount equal to 1,000 pounds to the square inch has been exerted in test cases without bursting the hose.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude and Compounding Ingredients."

RUBBER AND FABRIC SLEEVE FOR BLOW-OUTS.

Another device introduced for the purpose of assisting the motorist in case of tire trouble is a new form of blow-out sleeve with flaps for fixing in place. This sleeve consists of several



BLOW-OUT SLEEVE WITH SIDE FLAPS.

layers of cotton duck securely vulcanized together. The flaps are intended to be placed between the bead on the casing and the rim to prevent the sleeve from slipping. It contains seven plies of fabric and forms an effective bridge under the blow-out. These plies of fabric are cut on the bias to prevent the

flaps from tearing off and to form a strong protection to the inner tube. The sleeve is made in six sizes to fit any tire. [Essex Rubber Co., Trenton, New Jersey.]

RUBBER IN RESPIRATOR CONSTRUCTION.

Of recent years much attention has been given to the development of respirating apparatus to enable rescuers in mine or fire disasters to breathe comfortably in air filled with smoke, dust, or



HOW THE RESPIRATOR IS WORN.

poisonous gases. One of the simpler forms of these devices is shown in the accompanying cut. This respirator is made in one piece, of air-tight rubber fabric, and covers the whole face. It is fitted with a sponge which thoroughly filters the air supplied. The eye pieces are equipped with a slide-cleaning arrangement which enables the operator to clean the glass on the inside while in use. A tight fit against the face is secured by a

pneumatic cushion which is inflated previous to its use and controlled by a small stop cock. [S. F. Hayward & Co., 39 Park Place, New York.]

MAKING WORK EASY FOR THE PLUMBER.

Heretofore, great difficulty has always been experienced in cleaning out stopped-up sewers and drain pipes where the pressure of the water or other liquid alone was insufficient to remove

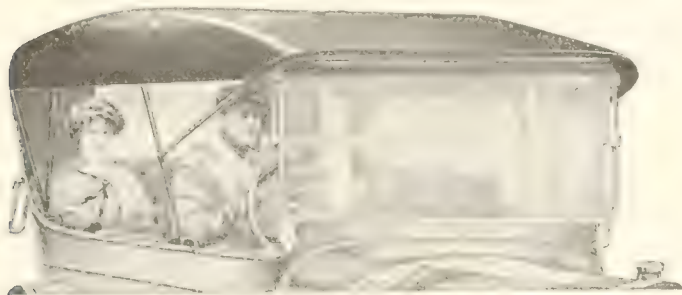


THE SCHICK SEWER CLEANER.

the obstacle. The device shown in the illustration has been designed to do the work of cleaning out these pipes by merely applying it to the end of the pipe and attaching a hose to one end of the brass connection. The body of the device is one continuous piece of flexible rubber vulcanized in the form of a choked cylinder. Either end of the cleaner can be used by attaching the hose to the opposite end of the brass nipple. It is made in 4 and 6-inch sizes, and may be used for any size of pipe up to these dimensions. [Davenport Manufacturing Co., Davenport, Iowa.]

AN AUTOMOBILE TOP MADE OF RUBBER

A Boston manufacturer is introducing an automobile top constructed of rubber and cloth. His new material is known as "Neverleak," and is described by its maker as absolutely waterproof without time limit, in any climate, and under all weather



CAR EQUIPPED WITH "NEVERLEAK" TOP.

conditions. It is also claimed that the material cannot shrink or wrinkle and that it will retain its luster. The coating of rubber is spread over a heavy layer of fabric in such a manner that the finished product forms a tough, leatherlike substance which will not crack like oilcloth or other fabrics containing no rubber. [F. S. Carr Co., Boston, Massachusetts.]

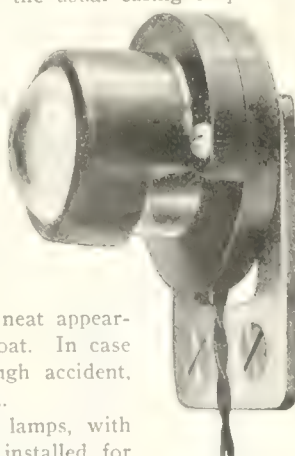
RENEWING TEETH IN A RUBBER COMB.

A great many hard rubber combs are stamped "Non-breakable," which is quite true if they are handled with proper care. But everybody probably has had the experience of seeing the non-breakable rubber comb drop from his hand and strike the edge of the marble wash-stand or the rim of the porcelain bath-tub and bound off with the loss of several teeth. To provide for such exigencies some thoughtful person has devised a hard rubber comb in which the teeth are fitted down into the back and held in place by a removable strip that fits into the top of the back. If some of the teeth are broken the comb can be put on a hot plate, where the back expands sufficiently to permit the removal of the holding strip, when new teeth are inserted in place, the strip replaced and the comb made whole again. This is interesting, but the probability is that most people will go on taking their chances with the old comb, buying a new one after too many teeth have been broken out.

MOTOR LAMP WITH RUBBER BODY.

Considerable attention is being attracted by a new electric lamp which, instead of being made with the usual casing of pressed metal, has a body and base made entirely of hard rubber. The lamp is made for either automobiles or motor boats and may be operated on the ordinary storage battery or by six dry batteries. The rubber base and body are molded under hydraulic pressure. Unlike metal lamps, this lamp cannot tarnish and needs no polishing; also it is not easily dented and presents a very neat appearance when installed in a car or boat. In case the body or base is broken through accident, it is easily and cheaply replaced.

It is stated that a set of four lamps, with two extra tungsten bulbs, can be installed for \$12, which is a low cost as compared with the usual system now in use. [H. W. Johns-Manville Co., New York.]



WATERPROOF GARMENTS FOR THE SPORTSMAN.

DURING the fall and winter months it is essential, both for the sake of comfort and health, that the sportsman protect himself from storm and exposure. For this purpose there is no lack of means, as is testified to by the great variety of rubber

boots, shoes, leggings, coats, caps, etc., that are constantly being placed on the market by manufacturers. These goods are not all old, however, for they are being brought out in new forms, styles and finishes every season. For instance, Fig. 1 shows a new fishing and outing hat that may be worn both in sun and rain. One side of the brim is extended to form a watershed to cover the neck in case of rain, while this same extension may be placed in front



FIG. 1 A RUBBERIZED HUNTING CAP.

to protect the eyes from the sun in clear weather. The cloth of which the hat is made is rubberized and absolutely waterproof.

Another hat serving the same purpose as the one above is made with a khaki or corduroy covering and a rubberized lining which makes it waterproof. The outer covering makes the hat "dressy" in appearance, while it affords protection at the same time. A feature which will appeal to hunters in cold climates is an extra lining of fur which may be pulled down over the ears. The rim may also be turned down to protect from rain or snow. Altogether, this is one of the most practical hunting caps ever made.

Going from head coverings to the other extreme, we see in Fig. 2 a pair of rubber leggings of unusual length, with the additional feature of an apronlike extension in front. The apron is provided with belt straps which serve to hold the garment in position. Down the side of each lower leg portion is a row of clasps by means of which the legging is securely and tightly fastened as shown in the illustration.



FIG. 2. RUBBER LEGGINGS WITH APRON FRONT.

Another new hunting garment that depends upon rubber for a part of its construction is a leather-lined coat with leather sleeves, and with knitted neck and wrist bands. Running up the back is a rubber elastic box plait which gives the coat a snug fit and at the same time allows freedom of action. This coat is ideal for protection from cold while hunting, automobiling, or engaging in other outdoor sports, and no doubt it could also be made to do even better service as a protection from rain, by impregnating the cloth of the body with rubber.

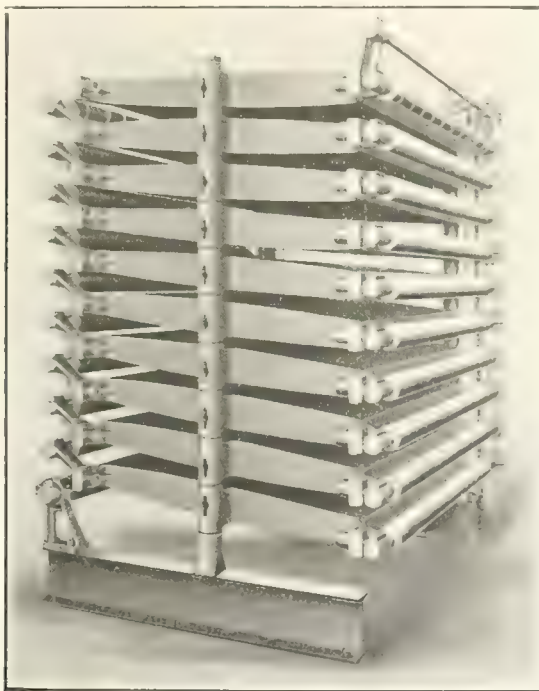
DRY STORAGE FOR TENNIS BALLS.

There has recently been put on the market a new air-tight box which is said to successfully overcome the decomposition that usually takes place in a rubber tennis ball after its initial use. This box is cylindrical in shape and is lined with a preparation specially designed to absorb all the dampness which the ball may have taken on during a game, and to which is due in great measure its premature deterioration. The tennis player who makes use of this box will find the ball when next taken out to be as good as new, and that its life will be much prolonged.

New Machines and Appliances.

A CELL DRYING MACHINE.

In the accompanying illustration is shown a machine which is usually a number of planes or cells, each of which is used by a number of planes or cells. The machine shown consists of ten cells or units, each 62 inches wide and 52 inches long in the direction of the cloth travel. These driers, however, are made with any desired number of units. Each cell is a hollow cast-iron box heated by steam, circulation being effected by baffle plates inside the cell. The fabric is drawn by brass rollers over the heated surfaces of the cells, running first over the top cell and then being drawn over its under surface, then over the top of the second cell and so on until it leaves the bottom cell in a perfectly dry condition. The machine takes but a fraction of the floor space necessary for the old types of cylinder and steam coil driers. The brass rolls are driven by an endless roller chain with a very small amount of friction. One feature of this drier which may be appreciated by new factories is the unit construction which permits of a machine of small capacity being installed at the start and then, as necessity requires, the machine



TEN CELL MACHINE FOR DRYING FABRIC.

is given an increased capacity by merely adding other cells at the top of the existing machine. [Cell Drier Machine Co., Taunton, Massachusetts.]

COLLAPSIBLE CORE FOR TIRE BUILDING.

What is claimed to be a radical improvement in the construction of tire building cores, has just been introduced to the rubber trade. Since the introduction of the quick detachable tire, most of this type have been built up on various kinds of collapsible cores, the principal one of which was the double ring type. This new core, however, it is claimed, is an improvement over the double ring type, in that it can be assembled or taken apart in a few seconds, is more durable, retains its shape and is as cheap to manufacture. Like other collapsible cores, this new device, which is termed the "Simplex," is

sawed into four sections and is provided with keys and end slots to guard against transverse movements of the sections. The novel feature is the single locking ring which is held in place by leverage and friction only. A circumferential groove with one



THE SIMPLEX COLLAPSIBLE TIRE CORE.

side tapered is machined into the tongue of each core section and a steel ring is fitted into this groove. When the four sections are placed together and the locking ring forced home, the core is drawn up into a perfect circle. The ring prevents radial movement in or out, while the keys in the ends of the sections hold them in alignment. Holes drilled behind the groove afford means of forcing out the ring when the core is to be collapsed. Only five parts are used in the construction of the whole apparatus. Altho this core has been on the market only a short time, it is reported by the manufacturers that more than 500 are now being used in tire factories. [Williams Foundry & Machine Co., Akron, Ohio.]

WRAPPING TIRES BY HAND.

In retreading tires, in the garage or repair shop, the operation is customarily performed by applying the bandage as tightly as possible directly from the hands. This requires skilled workmanship as well as considerable physical strength, and often results in uneven pressures being produced in different parts of the tire. To overcome this difficulty, the hard-operated retreader shown in the illustration has been designed.

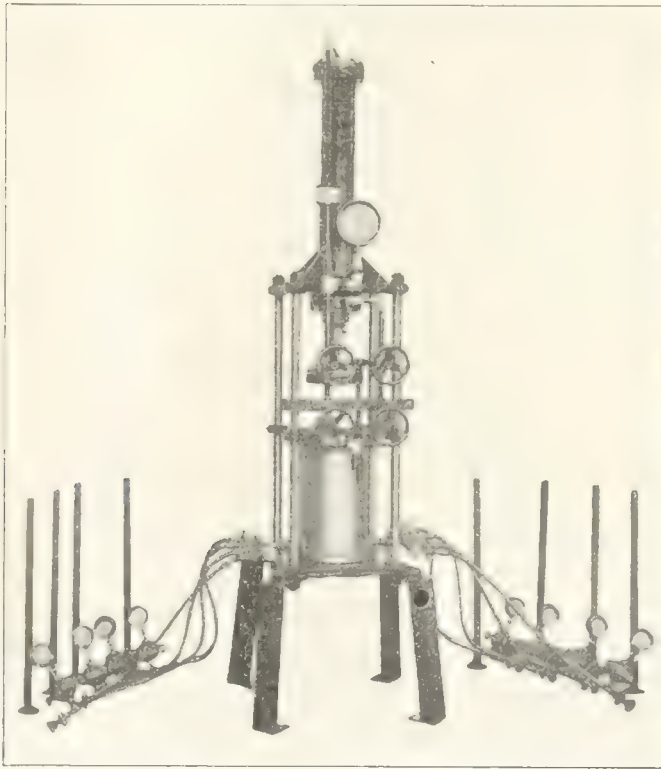
In operation, the wet bandage, tightly wound on its spool, is dropped into a recessed slot in the frame and the pressure arm is released against the bandage. A portion of the bandage is unwound and passed through the guides and once around the tire, establishing an overlap to secure the end. The tire is secured in a horizontal position, as shown, and the roller arm clasped around it. Then the machine is simply rotated, causing the bandage to be drawn from the spool and tightly wrapped around the tire. The average tire requires about three 20-yard bandages, depending upon the amount of overlap, which is regulated at will by the operator. The machine will wrap any tire from 2½ to 6 inches in size. In order that the tire be wrapped very tightly, it is necessary that the bandage itself be wound tightly upon its spindle. In order to accomplish this result, a

special winder has been designed, which stretches the bandage tightly around the spindle and passes it through water at the same time. Any desired amount of tension may be obtained in placing the tape around the tread, merely by adjusting the tension of the friction rolls. [R. G. Rossman, Seattle, Washington.]

NEW HYDRAULIC PRESS FOR FILLING TIRES.

The machine shown in the accompanying illustration is a new type of hydraulic press recently designed for filling automobile tires with a rubber compound or substitute for air, thereby producing a practically solid tire which is resilient and free from the disadvantages of the pneumatic. The press forces the material in liquid form into the inner tube under the same pressure as that used for filling with air. In a short time the liquid solidifies and forms a very soft but resilient core for the tube. The illustration shows the machine fitted with connections for filling eight tubes at the same time.

One side of the cylinder is connected by a pipe with the receptacle in which the filling material has been mixed. When the plunger rises it sucks this material into the hydraulic cylinder and a check valve prevents it from returning to the supply tank. From the cylinder it is forced into the tire through a small reinforced rubber or flexible metal hose. There is a short connection between the end of the hose and the tire, which is shut off after



HYDRAULIC PRESS FOR FILLING TIRES WITH RUBBER COMPOUND.

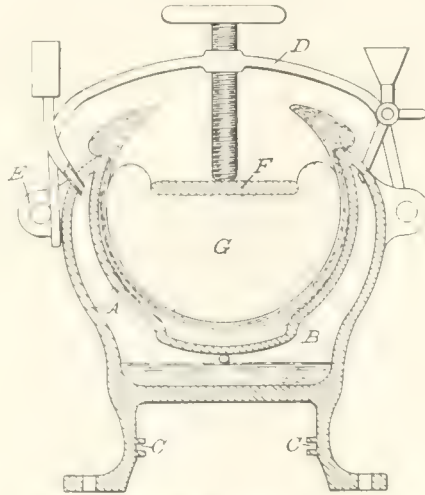
the tire is filled to the desired pressure to prevent the liquid from escaping until it has had sufficient time to solidify, after which the hose is removed and the cap placed on the tire in the ordinary manner.

The press is provided with double-acting valves, and is well suited to the requirements—such as the variable pressures—necessary in this kind of work. Each hose connection is provided with a gauge, by means of which different sized tires may be filled at the same time and the operation stopped when the desired pressure has been reached. This is said to be the only press of its kind ever built, and is designed especially for this class of work. [The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio.]

NEW FORM OF STEAM VULCANIZER.

We describe briefly herewith a recent French invention relating to a new form of steam vulcanizer for repairing casings of automobile tires. In this vulcanizer the boiler is formed by the mold itself, thus doing away with the usual intermediate

tubing between mold and boiler and the consequent condensation of the steam. The apparatus consists principally of the mold *A*, which on the inside conforms to the shape of the tire. The walls of the mold are hollow, constituting a steam boiler *B*. The device is set on cast iron legs which are provided with lugs *C C* for attaching gas, alcohol or other burners. The heat generated forms steam in the boiler



STEAM VULCANIZER WITH SAND BAG TEMPLATE.

and heats the walls of the mold, especially the interior wall with which the tire is in contact. In order that the surface of the tire be pressed firmly against the mold, two screw presses are mounted in the stirrups *D* attached to the sides at *E*, so that they press down on the plate *F* resting on a pad *G*. This pad may consist of a small bag of sand which will easily conform with the contour of the tire and hold it firmly against the hot surface of the vulcanizer. The device is provided with filling valve, overflow valve, steam pressure gauge and safety valve.

A RAMLESS HYDRAULIC PRESS.

In England, during the past year, there has been brought out what has been termed the "Pistonless" hydraulic press. While this name describes the machine in comparison with the usual

plunger type, the cover of the working cylinder really performs the functions of a piston. The cylinder is made collapsible, and when subjected to an internal pressure it extends and provides the power for which the press is employed. The cylinder is formed of a number of steel rings connected by a flexible steel fabric which is water-proofed on the inside by means of a coating of rubber. Such a construction provides flexibility and allows a pressure of 150 pounds per square inch to be carried with safety. The principal advantage pointed out for such a system is that a cylinder of larger diameter can be employed than is possible with the ordinary plunger press. With the collapsible cylinder the amount of power required to overcome the internal friction is very small and consequently low water pressure can be employed.



THE LISTER RAMLESS PRESS.

A force of 2 tons may be obtained with a cylinder 24 inches in diameter, acted upon by a water pressure of only 10 pounds per square inch. The illustration shows a machine having a cylinder of 2 gallons' capacity, capable of producing a working pressure of 10 tons. [R. A. Lister, Limited, Dursley, England.]

The Editor's Book Table.

THE PREPARATION OF PLANTATION RUBBER BY SIDNEY MORGAN, A. R. C. Sc., F. C. S. London, 1913: The Rubber Growers' Association. [Octavo, 270 pp., cloth covers; price, 10s. net.]

IN this comprehensive work Mr. Morgan has had the advantage of an intimate personal knowledge of the subject treated. During the past few years he has been Directing Scientific Officer for the Research Fund of the Rubber Growers' Association in the Federated Malay States.

The plan of the work combines simplicity with completeness. It deals, as its title indicates, with the preparation of plantation rubber. Its scope is best illustrated by its general contents:

Part I. Field operations.....	5 chapters	57 pages.
II. Factory operations.....	5 "	61 "
III. Machinery and buildings.	3 "	23 "
IV. Finished rubber.....	3 "	51 "
V. General	5 "	74 "

21 chapters. 266 pages.

Each chapter has a number of subheads which are indexed, so that reference to the text is much facilitated. As it will be seen, about four-fifths of the volume deals with rubber after it has passed the initial stage of a field product and has started on its way to become an article of commerce.

Prominent among the subjects treated under "Field Operations," is that of wide as compared with close planting. Most estates are now planted upon a scale of 20 x 20 feet, 30 x 30 feet or even 40 x 20 feet. Altho these distances may seem wide in comparison with the old plan of 10 x 10 feet or 15 x 15 feet, Mr. Morgan anticipates the possibility of the present rate being in a few years deemed too close. In cases where greater distance has been secured by thinning out trees, it has been found that in a short period (in some cases six months) the yield was greater than from the same area with double the number of trees. Moreover, the growth has been more rapid, with a prospect of a proportionate increase in the future. "Tapping Systems" are next dealt with, the text being illustrated by lucid tables and charts recording actual experiments. Among the objects of the latter was to determine whether the system of tapping had any effect upon the final quality of the vulcanized rubber. The further development of the subject treats of "Tapping and Collecting," "Transport of Latex" and "General Field Operations"; bringing the reader with the latex to the door of the factory.

Commencing with the preliminary treatment of the latex, the question of coagulation is then taken up, the author expressing the opinion that, altho the oldest general coagulant, acetic acid remains one of the best and safest at the present time. There is, however, a good deal to be said in favor of formic acid, which is equally as safe and efficacious as acetic acid but costs slightly more. The strength of the acid used, in connection with the results of tests after vulcanization, is the next point treated; while the principal features of the recent controversy regarding the use of sodium bisulphite are quoted as showing that no deleterious action is exercised on rubber by that agent. At this point the preparation of sheet and of crêpe rubber is dealt with in detail; the final chapter in the section of factory operations treating the "Drying of Rubber." Under this head are to be found the various drying processes, including air and smoke drying of crêpe, vacuum driers, air, sun and smoke drying of sheet, as well as artificial driers for crêpe and sheet rubbers. Other branches of the subject include the period of drying and the fuels used for smoking.

Having fully described the field and factory operations connected with the preparation of plantation rubber, Mr. Morgan

then takes up the subject of "Machinery and Buildings." With regard to the first point, he remarks that the increasing competition in machinery for the preparation of rubber will doubtless result in a continued improvement of design. The need for adequacy of the machines is forcibly urged. Finally the author recommends managers to base their final decision upon:

1. The experience of those already using the machines; 2, simplicity of parts; 3, lubrication system; 4, mode of adjusting rolls; 5, fitting of trays.

The chapters on factories and other buildings are illustrated by designs, and deal fully with the points involved.

The fourth part of the work takes up "The Finished Rubber," touching upon defects in crêpe, block and sheet rubbers, and how to avoid them; as well as the subject of comparative strengths. In this section will be found a general consideration of the comparative values of various grades of plantation rubber.

Among the features of the "General" section is a discussion of "Smoked Sheet *versus* Pale Crêpe as a Market Commodity," and also of "Plantation Rubber *versus* Fine Hard Pará." The writer objects to comparing all plantation rubber with Fine Hard Pará, as the modes of preparation are so distinct. He also shows that plantation crêpe rubber must not be compared even with plantation smoke-cured sheet rubber, which he considers the best and strongest form in which plantation rubber is prepared.

The work is throughout replete with interest, while its lucid style renders it doubly attractive to the planter, merchant and manufacturer, each of whom will find within its pages much information of both value and interest.

SCIENTIFIC AMERICAN REFERENCE BOOK, 1914. COMPILED and edited by Albert A. Hopkins and A. Russell Bond, Associate Editors of "The Scientific American." [Cloth bound, 12mo, 608 pages, 1,000 illustrations. Price, \$1.50.]

Former editions of this book have already made a name for it, and the work needs little introduction. In this latest volume are gathered statistics and information concerning those things which compose the vital factors of our material and scientific progress. It is a compendium of ready reference for the busy man, containing a vast aggregation of facts and figures regarding the fields of industry, commerce, arts, and science. Much of the information contained therein could not be found elsewhere without much trouble and inconvenience. For instance, in the summary of manufactures, the number of persons engaged, the horse power used, and the value of the finished products are given for the rubber as well as for hundreds of other industries. There is also a detailed comparison of a year's production of rubber in tons from all of the world's rubber-producing countries.

FACTOS ECONOMICOS (ECONOMIC FACTS). BY DR. MIGUEL Calmon du Pin e Almeida, Professor at the Bahia Polytechnic School, 1913. Rio de Janeiro: Livraria Francisco Alves. [Octavo, 432 pp., paper covers.]

In this comprehensive volume, printed in Portuguese, the author has grouped a number of facts bearing on various subjects in which he has been interested during his professional career.

The sections of a general character include that on "The Influence of Solidarity on National Agriculture," "Politics and Economic Development," and "Instruction as a Factor of Industrial Progress." Among the special subjects treated are "Alcoholism and the Industrial Utilization of Alcohol" and "Two Methods of Producing Tobacco in the East." In another section is treated the "Valorization of Coffee"; all of these subjects being dealt with in practical shape.

The chapter devoted to "The Depreciation of Rubber" recalls

various facts, which are presented in new lights. It is supplemented by detailed notes on "The Planting of Rubber in the East and Amazonia," "The Future of Synthetic and Natural Rubber," and "Data of Rubber Production and Commerce." Finally, two notes deal with a "Project of Law Affecting Rubber" and a "Project of Law as to Public Instruction."

In view of the wide scope of this work, the author must be complimented on the extensive ground he has covered, and its consequent value as a text book on the subjects dealt with. The volume is highly creditable to its author.

Some of its chapters dealing with rubber will be subsequently treated at greater length.

BELGO-BRAZILIAN CHAMBER OF COMMERCE, BRUSSELS.

Through the special "Bulletin" of the above body, now in its second year, an idea may be formed of the present development of trade between Belgium and Brazil. Manufactures of rubber equaled exports—\$7,600 (gold) for 1911, and \$37,000 for 1912. Crude rubber imports represented—1911, \$23,800; 1912, \$105,400.

Thus business in each direction increased more than four-fold between 1911 and 1912.

One of the most appropriate and interesting articles is that of Baron d'Anthonard, special envoy of France to Brazil. He expresses the opinion that the English are taking the lead in that country through their initiative and solidarity, while the Germans are implanting themselves through their diligence and the adaptability of their commercial methods. The French, he adds, are divided and isolated, struggling against these obstacles, but putting money in the country in the form of loans.

Professor Rodrigo Octavio, a jurist of Rio de Janeiro, discusses the condition of foreigners in Brazil.

M. Jules Tilmans, secretary of the Association of Rubber Planters, Antwerp, urges the particular advantages of that port, the commerce of which he shows for the past ten years. During that time the vessels entering the harbor increased in number 20 per cent., while the tonnage rose 50 per cent. In this augmentation rubber held an important position.

In an attractive article M. Armand le Dent, Technical Counselor at the Ministry of Agriculture, Rio, describes the many beauties of that port, his text being embellished by tasteful illustrations. Similar artistic engravings are scattered through the "Bulletin," showing the choicest scenes of Rio and Sao Paulo.

Other items of interest comprise a sketch of "A Modern Fleet" with reproductions of Brazil's well-known "Dreadnaughts" and other elements of modern naval warfare.

The design and execution of the "Bulletin" reflect great credit on its authors.

THE TIRED MAN OF THE MICHELIN COMPANY.

The Michelin Tire Co. has recently been illuminating its advertising matter by the portraiture of a personage called "Bibendum."



One of these portraits is reproduced herewith, and it shows him in a tired condition from the crown of his head to his feet. It will be noticed that he possesses an aldermanic contour, indicative of prosperity and general satisfaction with life. It will be noted, also, that he is always depicted smoking. Presumably he is smoking a cigar made of palm nuts, the smoke of which, as is well known in the rubber trade, is believed to give great nerve to the rubber.

NEW TRADE PUBLICATIONS.

A NEW FEDERAL RUBBER COMPANY FOLDER.

AMONG the interesting and attractive publications recently received is one of four pages, large newspaper size, issued by the Federal Rubber Manufacturing Co. of Milwaukee, Wisconsin, which describes in detail and effectively illustrates the remarkable development of the company's business and the growth of its plant, since its incorporation in 1911, from four buildings and power plant to 18 modern structures with floor space of approximately 300,000 square feet.

On the front page are reproduced photographs of the company's offices and of department managers and officials, the plant at Cudahy as it appeared two years ago, one year ago and a drawing showing how it will appear when the work of construction commenced this year has been completed. Page 2 is devoted to illustration of the general office building and to 8 photographic reproductions of administrative, executive and general offices. Page 3 is occupied by 15 excellent photographs of factory interiors—machine-shop, calender-room, testing and research departments of laboratory, fabric coating room, tire building department, wareroom, etc., etc. The last page shows 12 of the company's 45 branches and service stations, with portraits of their managers, these various branches being located in the 12 principal cities between Boston and San Francisco.

Another folder or "broadside" issued by the same company sets forth in detail the superior qualities of its new double cable-base tire construction. It is pointed out that the most serious forms of tire trouble are: side-wall breaks, rim cuts, blowing off of the rim, and tube pinching, and that the tire with a hard-bead filler is conducive to these defects. The new Federal tire has incorporated in each bead two endless, five-wire cables of great tensile strength. These cables serve to anchor the heel and toe of each bead securely to the rim. Surrounding the cables is a flexible bead filler imbedded in soft rubber, forming a support for the tire side walls where they bend to meet the side rings. The folder illustrates and describes in detail the construction of this tire.

CIRCULAR ON CHEMICALS FROM E. DE HAEN.

We are in receipt of the latest folder and price list of E. de Haën, the well-known concern of Seelze, near Hanover, Germany, which for a great many years has made a specialty of the manufacture of chemicals for the rubber trade. Copies of this list, and of catalog, may be obtained by application to Messrs. Pfaltz & Bauer, New York agents, at 300 Pearl street.

BRISTOL'S RECORDING INSTRUMENTS.

In these days of efficiency it is more than ever necessary to record facts and figures with accuracy. The remarkable completeness of the "Bristol" line in this respect makes it of interest to every well organized factory.

A set of current catalogs has been issued by this enterprising house in a binder, presentation and reference being thus facilitated.

The catalog of recording gauges for pressure and vacuum is followed by separate bulletins dealing with recording water-level gauges. Next in order come the lists of differential pressure gauges. Perhaps the section that will prove of most general interest is that which describes recording thermometers, which occupies a large share of the binder and illustrates thermometers for all purposes. A special catalog deals with the W. H. Bristol electric pyrometers.

Electric recording instruments form an important part of the catalog, while other sections include time, motion, speed, flow and humidity.

It requires an examination of the Bristol general catalog to

appreciate the many uses of recording instruments. The extent of the field covered by the company may be understood from the fact that a partial list of firms using Bristol gauges includes over 2,000 leading concerns in the United States. This standard line is made by The Bristol Co., Waterbury, Connecticut.

IF A TIRE COULD SPEAK

The Hood Rubber Co., of Watertown, Massachusetts, has just issued a little brochure entitled "If a Tire Could Speak," which gives in entertaining form the autobiography of an automobile tire. This particular tire, because of its attractive appearance, was put by the dealer in his show window, where it stood day after day in the blazing sun. Fortunately, however, this experience was a short one, as a motorist who had had a disastrous experience with a skidding tire pulled up in front of the dealer's store and demanded this particular window tire. It was put on his machine, and it relates in its own way its further experiences. The book is quickly read, is humorously illustrated and gives the user of tires some excellent advice.

ON THE CARE OF AUTOMOBILE BRAKES.

An interesting booklet, recently published by the H. W. Johns-Manville Co. of New York, contains much valuable information on the construction and care of automobile brake linings. This booklet also describes the new J-M electric lamp, the body of which is made entirely of hard rubber; the J-M radiator shield, fire extinguishers, valve packing and a large number of other asbestos products.

A TYPICAL ENGLISH RUBBER CO.

In an artistically illustrated catalog recently issued, the India Rubber, Gutta Percha & Telegraph Works Co., Ltd., Silvertown, London, has told the story of its varied production.

First is shown the power-plant, with a 700 k. w. generating set, followed by a motor-driven rubber-washing machine, a direct-driven rubber warmer as well as mixing and calendering machinery. These first processes deal with the rubber in an unfinished state, while, for the rubber-covered or impregnated fabrics there are the "Waterproof," "Belting," "Tire," "Hose" and "General Mechanical" departments.

An interesting specialty of this company is the "Palmer Cord Motor Tire." The fundamental difference between this and all other motor tires is that instead of four, five, or more layers of canvas, the foundation consists of only two layers of cotton cord, impregnated and coated with the finest rubber. The illustrations comprise: The high-pressure solutioning apparatus for expelling air from between the fibres of the threads in the cords; tire shop and cord laying machines; tire molding shop; tire vulcanizing plant, and other features of the tire department.

Ebonite is another specialty of the company's make, in which, as the catalog recalls, the prolongation of the vulcanizing process causes the use of a greater proportion of sulphur than is the case with soft rubber goods. Surgical appliances, testing instruments and an infinite number of other articles are made of ebonite. Adhering well to metals, it finds a useful sphere for mechanical purposes.

GUTTA PERCHA DEPARTMENT.

Gutta percha has always taken a prominent part in the manufactures of the company, and the processes for its treatment are described in the catalog. On their arrival at Silvertown the blocks are first softened in warm water tanks and are washed for the removal of the grosser impurities. They are then worked up in masticators and the remaining impurities eliminated by means of fine sieves, through which the material is forced at a pressure exceeding 100 tons. The mass is then passed through cylinders, which roll it into sheets of any desired width and thickness, being then ready for application to any form of manufacture.

While the extent of its application is secondary to that of rubber, there are many cases in which it cannot be replaced by any other known material. Among its chief uses is the core of submarine cables, for which purpose it is generally employed in preference to India rubber as the insulating material. This is due to the greater facility of application to conductors arising from its plasticity. Moreover, faults or imperfections can be more easily localized during manufacture or in service. A considerable portion of the Silvertown works is devoted to the manufacture and maintenance of this gutta percha core.

Other important applications of gutta percha are the manu-



GROUP OF ARTICLES MADE OF GUTTA PERCHA.

facture of bosses for cotton spinning machinery, acid test bottles and tubes for use in breweries, for hospital purposes and in dentistry.

Golf balls form one of the best known applications of gutta percha, in which manufacture a considerable change has occurred of late years, solid balls having been replaced by those with cores of rubber thread. The catalog finally deals with the electrical department, the various machines being effectively illustrated.

GOODRICH CONVEYOR BELTS.

The B. F. Goodrich Co. of Akron, Ohio, has issued a small eight-page folder, attractively printed in three colors, descriptive of three conveyor belts which the company is now marketing. They are the "Long Life," "Grainbelt" and "Maxecon."

The "Longlife" is adapted to general service involving hard usage likely to wear out an ordinary quality; while the "Grainbelt" is particularly intended for grain. Having no extra thickness of cover, it cannot, however, be used where there is much surface abrasion. For the higher class of service, where the belt is not run continuously, the "Maxecon" is a reliable and economical grade. At the same time, it is not recommended for hard wear as a cheap substitute for the "Longlife."

Goodrich conveyor belts, it is claimed by the makers, carry more tons per dollar than any other quality, this being the only correct standard for comparing different installations. Such a degree of excellence is only obtainable through careful selection of material and attention to the necessary thickness of cover.

With the attractive title, "The Reason Why," a separate catalog deals with the answer so far as regards the "Long-life" belt.

AN ENGLISH TIRE CATALOG.

A very complete catalog on tires has been recently sent us by The Shrewsbury & Challiner Tire Co., of Manchester, England. This booklet gives a large number of illustrations of "Giant" and "World" endless band, solid rubber tires in their actual sizes, which allows the construction of the tires and their manner of fastening to the rims to be shown to good advantage. A page is devoted to illustrations and an explanation of the proper method of testing for alignment of wheels. This is an important subject, since poor alignment, caused by bent axles or steering arms, is responsible for much undue wear in both solid and pneumatic tires.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

MOTOR TYRE NOTES.

THE Clark Tyre Co., Ltd., has leased some large mills at Crayford in Kent and expects to be turning out tires before long. The patents deal with the method of building up the rubber and canvas of the pneumatic tire and are the outcome of long experimenting by Mr. Clark in Australia, where he has been for seven or eight years. The new company is well backed, its capital, I understand, being in the neighborhood of £150,000. The contract for machinery has been placed with Messrs. Eddon of Leyland.

The Prowodnik motor tire, which is characterized by its peculiar brownish color, appears to be very popular and to be selling well against its rivals, despite the fact that the covers cost about £2 more than those of well known makes longer established.

On October 16, Mr. George Sutton, manager of the W. T. Henley's Telegraph Works Co., Ltd., showed a large party of motorists and dealers over the new tire factory just opened at the company's Gravesend branch.

Judging by the demand in Paris for the Macintosh tire, this make seems to have firmly established itself in France.

I hear that the Stelastic tire is coming on well in public estimation. It is owned by the limited company of this name which was floated about a year ago. The steel in this tire is in the form of springs embedded in the rubber, thus differing from the Wood-Milne tire in which fine steel dust is mixed with the rubber. The business done in motorcycle tires has largely increased of late owing to the growing popularity of these machines. These tires are made in varying qualities, the wear being generally in a direct ratio with the price. Prices at retail vary from 14s. to 52s. each, the latter figure being that at which the well-known Kempshall tire is sold.

The Dook-Swain Tyre Co., of Manchester, is to be wound up voluntarily, a resolution to that effect having been passed at a meeting of the shareholders. Mr. Leo Swain, the prominent tire and motor accessory agent of Manchester, severed his connection with the company many years ago.

ASBESTOS.

The lamentable railway disaster at Aisgill in September last brought the matter of fireproof railway coaches under general discussion. According to numerous press reports a prominent railway official declared that asbestos was unsuitable for constructional work because it attacked nails, metal fittings, etc., and there was also a doubt as to how long its fire-resisting properties would last. Mr. J. A. Fisher, however, wrote to the press pointing out that the statements in the papers were not correct, as it was fireproofed wood and not asbestos that they referred to. A good many people were naturally surprised when they read of the supposed defects of asbestos and Mr. Fisher's letter was decidedly appropriate, in the interests of an important industry.

Asbestos millboard is already largely used in the construction of coaches on the underground electric railways in London, and quite recently the Midland Railway has commenced experimenting with fireproof coaches in which asbestos is used. Of course there will be competition among the makers of asbestos goods for the new demand which is foreshadowed, and it may be that pure asbestos fibre will not hold the field.

A substance called uralite is already being largely used for fireproof buildings. This is understood to consist of asbestos fibre cemented by a mineral glue consisting of gelatinous silica

and a little chalk, the whole being consolidated under heat and pressure. Asbestos slates are being increasingly used, a prominent instance being at the new Partington steel works near Manchester. This industry I mentioned some months ago was being taken up by Messrs. Turner Bros., Ltd., at their new works at Trafford Park, Manchester, and they have recently taken more adjoining land with a view to future developments. A modern use of asbestos is in connection with the acetylene gas industry. In order to make a non-explosive transportable gas the Acetylene Illuminating Co. uses light steel cylinders filled with baked asbestos, the pores of which are charged with acetone. The cylinders are then charged with acetylene under pressure, and on opening the valve the gas is given off steadily. Such cylinders are chiefly used for lighting motor vehicles.

MILK PRODUCTS.

The last few years have seen great strides in the industrial applications of milk, apart from the development of the manufacture of foodstuffs such as dried milk in South America. One sometimes hears casein products referred to as rubber substitutes, but, tho they may have entered in small quantity into certain rubber mixings, I feel sure that the rubber planter has little to fear in this direction. It is the camphor producer whose business is threatened, as by far the greater amount of the commercial articles made from casein enter into competition with those made from celluloid, an important desideratum being their non-inflammability. Up to quite recently only one of these casein bodies has had any real commercial success. This is galalith, made on the Continent of Europe; but this has now found a competitor in lyrolit, which is being manufactured at Stroud, in England, and which is reported to be in demand in trade circles where celluloid, xylonite, etc., have hitherto been used. It is also said to be a good electrical insulating material and to be able to replace vulcanite. Here, of course, it comes into competition with rubber.

I think, however, that in the state of public feeling against the dangers of celluloid, the non-inflammable milk products will find their best markets in the case of goods for household and personal use. For instance, they have proved quite satisfactory for buttons; and there has been quite an outcry lately about inflammable celluloid buttons. Lyrolit may possibly not have the defects which have characterized its predecessors, prominent among which are liability to absorb water and swell up, and the fact that, unlike celluloid, thin films of the material cannot be obtained. Galalith is manufactured in France by the Compagnie Internationale de la Galalithe Hoff et Cie, at Levallois-Perret, and in Germany by the well-known United Harburg-Vienna Co., at Harburg. These milk products are of quite different constitution to the other principal substitute for celluloid, viz., bakelite, a condensation product of phenol and formaldehyde. This body, which originated in America, is now being made in Europe.

THE LIVERPOOL FACTORIES.

The Liverpool Electric Cable Co., which used to be located in Vauxhall Road, next to the Liverpool Rubber Co., is now established at Linacre Lane, Bootle, a suburb of Liverpool. This company has no connection with the New Liverpool Rubber Co., of 292 Vauxhall Road. This latter company, it will be remembered, was so named when the concern formerly called the Liverpool Rubber Co. was taken over, a few years ago, by Messrs. C. Macintosh & Co., Ltd. The works manager is Mr. M. Davis. Some little distance away, at Walton, the New Liverpool Co.

has a branch works entirely devoted to the rubber shoe business. This is managed by Mr. Frederick H. H. Smith, eldest son of Sir F. H. Smith, Bart., who is chairman of Messrs. Macintosh & Co., Ltd. Mr. Ivor W. Davies is the works manager.

MR. HERBERT STANDRING.

Mr. Herbert Standring has somewhat startled his numerous friends in the rubber trade by the announcement that he has resigned his position and all connection with the "India Rubber Journal" in order to embark on a new venture. Mr. Standring has been associated with our contemporary since its birth in 1884. At that time he was connected with the production of other trade journals and happily hit upon the rubber trade as offering good scope for further journalistic enterprise. For many years he retained the editorship, relinquishing this when the paper was taken over by Messrs. Maclaren. I know nothing of the details of the new work to which he has set his hand but have no doubt that he will bring to it all that industry and enthusiasm which has characterized his connection with rubber journalism in the past.

MESSRS. J. E. HOPKINSON & CO., LTD.

This firm, whose works are situated in rural surroundings at West Drayton, Middlesex, has recently found it necessary to call its creditors together, and the upshot of the conferences that have been held is that, with the assistance of some of the principal creditors, a new company is to be formed. The matter has not exactly gone through yet but it is fully expected to do so by the first of January, the date fixed. The name of the new company is to be the Caxton Rubber Manufacturing Co., the capital being £10,000. Mr. Hopkinson, with whose financial predicament there is general sympathy, explains that the present situation has been brought about by the falling through of a scheme whereby his works were to have been purchased by a certain firm and a large company formed to manufacture goods from murac, a body which was more extensively advertised some years ago than it is at present. The Murac works are at Edmonton, near London, but I understand that business is practically at a standstill owing to an injunction against them by the local authority for causing a nuisance.

BALATA IN FOOTWEAR.

A compound consisting largely of balata is being increasingly used by Messrs. R. & J. Dick, of Glasgow. In leather boots the soles are made of this material, which is said to have advantages over leather mainly because it is absolutely impervious to water. Such soles cost about the same as leather but have three times its life. Tennis shoes for grass or asphalt courts are now made with balata soles on a thin leather basis, these soles being also used instead of leather for sand shoes.

FRENCH MANUFACTURERS TO EXHIBIT IN LONDON.

The Syndical Chamber of Rubber Manufacturers, Paris, of which Monsieur G. Lamy-Torrillon is the president, met recently and unanimously decided to give the Fourth International Rubber and Allied Industries Exhibition to be held in London next June their official recognition. This now completes the list of important associations in all parts of the world connected with the rubber industry, producing and manufacturing, which have accorded the coming exhibition their recognition. The list includes the following associations: The Rubber Manufacturers' Associations of France, Germany, Austria, and Belgium; the Rubber Club of America; the Rubber Growers' Association of London; the Planters' Associations of Ceylon, Indo-China, Belgium, British Malaya, Malacca, Johore, Southern India, and Java; the Rubber Association of Holland (Amsterdam); the Commercial Associations of Pará, the Amazonas, the Republic of Peru, and other producing countries. Every important producing country will be officially represented.

MR. EATON'S REPORT ON EUROPEAN FACTORIES.

IN the report of his visits to different European rubber factories and testing stations, Mr. B. J. Eaton, of the Agricultural Department of the Federated Malay States, has pointed out several facts of interest. He refers in the first place to the complaints (which he considers justified) of the unclean condition in which plantation rubber is often received in Europe, containing pieces of wood, splinters, sand, and other impurities. This fact necessitates thorough washing, imposing more work on the manufacturer and frequently affecting the quality of the rubber, the methods of cleaning used in the East having in many cases not proved satisfactory.

Mr. Eaton recalls the fact that previous to vulcanization the rubber is cut fine and placed in large tanks of cold water. It is then worked by means of a "Hollander," in which the heavier foreign substances such as sand sink to the bottom, while the lighter impurities such as bark and splinters rise to the surface. The rubber is then removed by means of forks; this method seeming to be more efficacious than the process of direct washing in the crêping machines. Mr. Eaton expresses himself in favor of the machine in which the washing and further operations are conducted under water.

Any one acquainted with the later processes of rubber manufacture will understand the importance of preliminary cleaning, every particle of undesirable substance left in the rubber producing a weak spot in the subsequent vulcanized product. Such weak places when subjected to mechanical strain naturally give way.

There is no uniformity between the width of the rollers of the washing and crêping machines and the dimensions of the packing cases. The employment of rollers of interchangeable diameter is recommended for the production of rubber in any desired uniform width.

With regard to coagulation, Mr. Eaton does not approve the present system, but recommends the latex being allowed to flow into long troughs, divided by partitions.

[Details of these new coagulating tanks were published in the October issue of the INDIA RUBBER WORLD, p. 44.]

A point on which manufacturers complain of plantation rubber is the lack of uniformity in quality. It appears impossible to get a quality equal in uniformity to the standard of Fine Hard Pará. Even in the good qualities there is much variation. This fact is attributed to the diversity in methods of coagulation, each plantation using a system of its own.

Mr. Eaton remarks that too little attention is paid to the color of rubber by manufacturers, who in general consider that it forms no criterion of the value. Hence rubbers of various colors are treated at the same time. He adds that makers of "dipped goods," calling for translucency, require for that purpose the lighter shades of rubber.

According to Mr. Eaton's experience, there is in Europe a diversity of opinion as to the drying of rubber, the vacuum dryer being generally used where quickness is desired, while drying chambers are usually employed under other circumstances. The temperature of the vacuum dryers he found to vary from 140 to 160 degrees Fahrenheit, some qualities being dried at a higher and others at a lower degree of heat. Certain fine grades, such as Fine Hard Pará, can be dried without injury at a very high temperature.

The preparatory operations to which rubber has been subjected are of considerable moment in connection with its subsequent treatment. Plantation rubber of the highest grade undergoes no preliminary washing, but is hung out in order to permit the evaporation of the moisture it may have absorbed in transit. This grade is seldom met with. All other qualities of plantation rubber are washed as far as possible at one time, to insure uniformity of product.

With Fine Hard Pará and other grades packed in like manner,

the bales are cut open and the contents soaked in boiling or warm water until the rubber is soft enough for further treatment. In conclusion it is stated that plantation rubber loses in washing from 1 to 2 per cent., while the loss varies in other classes of rubber.

Such are the principal features of Mr. Eaton's report on his visit to Europe as reproduced by the "Indische Mercur.".

GREAT BRITAIN'S RUBBER GOODS TRADE.

The total commerce of Great Britain in rubber manufactures for the year 1912, as shown in the following table, amounted in value to \$17,661,437.

	Imports.	Exports.	Re-exports.
Boots and shoes of rubber, or of which the component material of chief value is rubber.	\$638,722	\$651,141	\$75,121
Waterproofed wearing apparel, including that waterproofed by processes other than coating with rubber.....	40,270	3,958,053	8,171
Other manufactures of rubber, except tires and tubes for carriages	3,370,431	8,427,852	491,677
Total	\$4,049,423	\$13,037,046	\$574,969

Of the boot and shoe imports, 56,822 dozen pairs, valued at \$398,629 were supplied by the United States, 37,722 dozen pairs, worth \$184,513, being furnished by Germany. In general rubber goods, Belgium was the chief source of supply, the imports from that country amounting to \$2,288,506, Germany and the United States supplying respectively \$1,532,325 and \$1,103,493 worth.

Statistics for 1912 included rubber tires and tubes with motor cars, motor cycles, etc., and their parts, but during 1913 these figures have been separately recorded, and for the six months ending July 31 a commerce of \$8,157,705 is shown in this branch of the rubber industry, being divided as follows: Imports, \$3,578,335; exports, \$3,852,510; re-exports, \$726,860.

NEW USE FOR RUBBER ON MOTOR VEHICLES.

On one of the later models of a prominent English motor truck is seen a new use of rubber. Surrounding the propeller shaft is a capacious thrust tube, which absorbs the forward thrust from the rear axle by means of a cast-steel cross member at the forward end of the tube. The ends of this cross member are mounted in special brackets attached to the side frame members of the chassis, each bracket containing a round rubber seating block, into which the ends of the cross members fit. This method of design is adopted in order to insure flexibility of this part with reference to the final drive.

ODORLESS RUBBER SPONGES.

While various opinions adverse to rubber sponges have been ventilated in the German press and have been disputed, the merits of the article have been prominently urged by several of the leading manufacturers. This has in one case taken the form of showing that the report as to their having an unpleasant odor can only refer to inferior grades, high class qualities, made from a good grade of rubber, being exempt from that defect. Other makers have been urging the fact of their not injuring the tenderest skin.

"HOPP-HOPP."

"Hopp-Hopp" is the name of a new toy rubber ball brought out in Germany, its name indicating its lightness and elasticity. It can be allowed upon fragile articles without doing any damage, is very transparent and of effective appearance.

OLYMPIA MOTOR SHOW

The promoters of the recent motor show at "Olympia," London, claim that it formed the most typical collection of motor cars ever assembled under one roof. It lasted from November 7 to November 11, and from its opening day the attendance and the business transacted seem to have borne out the above contention.

Among the most attractive exhibits were those of the Rolls-Boyce, Daimler, Metallurgique, Sunbeam, Darracq, Fiat, Humber, Cadillac, Clement-Talbot, and other concerns. The value of the show as a means of attracting business is admitted by manufacturers, even pessimists allowing that the interest displayed has been greater than they had anticipated. "Olympia" may thus be regarded as one of the really important social and industrial features of the immediate future with respect to the auto industry.

An inspection of the "Olympia" exhibit is said to have shown that a large majority of the cars were fitted with "Dunlop" tires. The exhibit of the Dunlop Rubber Co. itself included the new twin detachable wheel for carrying double rear tires on heavy cars. The Michelin company made a fine exhibit of tires and accessories. The Continental Tire & Rubber Co. gave a representative display of specialties.

FOREIGN TRADE NOTES.

The exports of balata from Venezuela in 1912 amounted to 9,129,657 bolivars (\$1,762,023.80), being divided between Germany, France, the United States, and Great Britain in the following proportions: Germany, 3,331,606 bolivars (\$642,999.95); France, 3,122,631 bolivars (\$602,667.78); United States, 1,498,169 bolivars (\$289,146.61); Great Britain, 1,177,251 bolivars (\$227,209.44).

American manufacturers have been for some time making rubber-soled outing shoes with small toe-caps of rubber, but the samples lately put out by a Canadian company, The Kaufman Rubber Co., Limited, of Vancouver, show a cap of white rubber about the size of an ordinary toe-cap, the idea being to prevent the soiling of the canvas upper in addition to saving the foot from dampness.

The Continental Tire & Rubber Co., of London, England, has recently established a plant at Mazagon, Bombay, for the reconstruction of old tires. This plant comprises a factory, well equipped for this purpose, power house, etc. The fact that the freight on tires from Bombay to Calcutta by either rail or steamer amounts to quite an item makes it seem probable that this company will confine itself to reconstruction work and that there may still be room for the native Indian tire manufacturing plant at Calcutta proposed some little time ago, but whose organization has not yet been completed.

A College of Agriculture, costing \$150,000, is to be built in Rhodesia by the British South Africa Co.

The value of raw and waste rubber imported into Russia during 1913 amounted to \$11,264,000, a gain of \$2,685,500 over the imports of similar goods in 1912. The exports of that country to the United States in rubber waste dropped from \$21,862 in 1912 to \$10,314 in 1913.

At the exposition to be held in Dusseldorf, Germany, in 1915, for the purpose of depicting what human ingenuity and endeavor have accomplished in the last century in the branches of commerce, trade, science, industry, and art, a section will be devoted to the progress in chemistry—general, special, synthetic, analytic, and applied.

THE FRENCH AUTOMOBILE SHOW.

Well in advance of its rival displays in other countries, the French Automobile Show was held in Paris from October 17 to 27. An article dealing with this show, so far as it affects rubber, will appear in the issue of January.

SIEGMUND SELIGMANN

A remarkable anniversary has lately been celebrated in Germany. Siegmund Seligmann, a pioneer of the German rubber industry, attained his sixtieth year on August 19 last. Being at the head of the Continental Caoutchouc und Guttapercha Co., of Hanover, his name is familiar to the rubber trade in general, but in view of the recent celebration it may be appropriate to recall some personal details of his career.

Born on August 19, 1853, at Verden (Aller), he passed through the Royal Cathedral Gymnasium at Verden, later on studying privately at Harburg (Elbe). His commercial training



SIEGMUND SELIGMANN.

was received in the Hanover banking house of B. Magnus, the proprietors of which were co-founders of the Continental Co.

On April 7, 1876, Herr Seligmann was appointed to a confidential position in the Continental Co. for the purpose of a reorganization. In the year 1875 the company's situation was so menaced that Herr Jacob Frank, the director, submitted an alternative proposition of suspending payments or obtaining new credits. Hence the intervention of Herr Seligmann became necessary. In the capacity of cashier of Messrs. Magnus, he made a thorough investigation of the company's position, as a result of which new credits were accorded by the bank. This re-organization was due to his energy, ability and caution, showing what young Seligmann was made of, and his eligibility for future higher responsibility. On April 7, 1876, his services were transferred to the company for which he held a power of attorney from October 12 of the same year, becoming a member of the board on July 17, 1879, which position he still fills. For the term of thirty-seven years he has thus held various posts of increasing responsibility, culminating in the direction of the company's operations.

With the entrance of Herr Seligmann and of the late chemist, Dr. Prinzhorn, the upbuilding of the company began, the foundation being laid for its ultimate important position in the world's rubber industry.

In 1905 Herr Seligmann received the distinction of "kommerzienrat," or "Commercial Councillor," while in various other capacities he has acquired a high reputation. He is a member of the Hanover Chamber of Commerce, of the board of the Central Association of German Rubber Goods Manufacturers, and a member of the board of the German Exhibition Commission.

THE INDIA RUBBER WORLD adds its own to the many expressions of personal regard for Herr Seligmann on the part of European rubber contemporaries.

GERMAN OPINION RESPECTING THE FUTURE OF RUBBER.

IN commenting upon the position and prospects of rubber, various German authorities have called attention to the absence of the Stock Exchange operations and reckless establishment of plantations which led to the depression succeeding the boom of 1910. Supply and demand are now the regulating factors, governed in their turn by the available stocks and the wants of dealers and manufacturers.

One of the explanations adduced for the disproportionate fall since May, 1911, of about 50 per cent. in Fine Pará and of nearly 70 per cent. in plantation, is the different manner in which the offerings are made. Wild rubber is concentrated in the hands of relatively few concerns, while every plantation company has a representation in England, altho in some cases grouped with others for the sake of economy and convenience. Plantation rubber is widely distributed among the London houses on consignment and is thus at the mercy of buyers.

One prominent German rubber merchant attributes the lack of uniform quality to the fact that with so many plantations and an equal number of managers, differences in preparations are unavoidable; uniformity in large quantity not being possible, as in the case of Fine Hard Pará. Large buyers are said to recognize the fact that all qualities of latex from known trees are in themselves good, and that the production of a better or an inferior rubber depends upon the mode in which the latex is treated.

In the matter of future supply, the question of the possible overthrow of wild rubber in favor of plantation rubber and the latter controlling the market is generally regarded as unworthy of serious consideration. "Long before a rubber tree was planted in Asia," it is remarked, "the forest used to send us rubber at prices near the present limit."

Regarding the statistical position, the fact of production and consumption for 1912 having maintained an even balance of about 100,000 tons is adduced in proof of the assertion that there is at present no visible overproduction. Starting from this point of 100,000 tons consumption for 1912 and adding an estimated annual increase of 15 per cent., the anticipated quantity for 1919 would be 265,900 tons, against the Akers estimated production for the same period of 302,450 tons.

In relation to plantation rubber, two proposals have been ventilated which have attracted much attention in Germany: The Central Selling Agency in London, and the project of selling rubber in the countries of origin. Both these plans have been commented upon with favor.

COMPARATIVE EXPORTS OF RUBBER GOODS TO BRAZIL FROM GERMANY AND THE UNITED STATES.

A comparison of statistics shows between 1907 and 1911 German exports of rubber goods to Brazil increased by about 38 per cent., while the augmentation in United States exports to that country between 1907 and 1912 equalled about 265 per cent. The figures are as follows:

	EXPORTS OF RUBBER GOODS TO BRAZIL.	
	From Germany.	From United States.
1907.....	\$206,000	\$56,012
1908.....	156,750	59,867
1909.....	170,500	84,462
1910.....	254,500	105,145
1911.....	278,750	150,465
1912.....	.....	199,239

HARD RUBBER PROPELLERS FOR AIRSHIPS.

Advices from Germany state that renewed attention is being given to the possibility of using hard rubber propellers for airships in place of cherry, walnut and pear, those woods having been most generally employed for that purpose. A wooden propeller costs from \$400 to \$500.

Some Rubber Planting Notes.

FEDERATED MALAY STATES—RUBBER OUTPUT.

ACCORDING to information cabled by the Federated Malay States Government, to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of October amounted to 4,838,400 lbs. as compared with 4,480,000 lbs. in September, making the total for the ten months of the present year 42,078,689 lbs. as compared with 27,917,013 lbs. for the corresponding period last year.

Appended are the comparative statistics for 1911 and 1912:

	1911	1912	1913
January	1,329,170	2,730,576	4,772,880
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
April	1,235,917	2,285,390	3,642,240
May	1,147,488	2,255,034	2,744,000
June	1,229,754	2,305,915	4,491,200
July	1,581,993	2,695,861	3,989,440
August	1,651,845	3,655,535	5,293,120
September	1,677,062	2,968,121	4,480,000
October	2,182,857	3,215,231	4,838,400
Total	15,443,154	27,917,013	42,078,689

RUBBER EXPORTS FROM THE FEDERATED MALAY STATES.

Shipments of cultivated rubber from the Federated Malay States for the first eight months of 1913 amounted to \$14,627.74, a gain of \$6,557.15 over shipments for the first eight months of 1912. The following comparative table shows the destination of these shipments:

To—	1912. Tons.	1913. Tons.
Straits Settlements	3,284.50	6,395.11
United Kingdom	3,981.25	6,905.07
Continent of Europe.....	574.34	920.81
Ceylon	220.42	406.75
Other countries	10.08	.....
Total	8,070.59	14,627.74

FEDERATED MALAY STATES RUBBER CO.

Notwithstanding its English title, the financial organization of this company is Belgian, its headquarters being at Antwerp. At the time of its establishment in 1905, its object was the planting of coffee in the Malay peninsula, but later on the high prices of rubber and the boom in that article induced the directors to abandon the former cultivation and to replace it by that of the latter.

Its capital equals \$820,000. Its dividends have been: 1906, 8 per cent.; 1908, 9.24 per cent.; 1911, 2.90 per cent. The yields were: 1906-7, 32,000 pounds, and 1911-12, 721,000 pounds, while the estimate for 1912-13 exceeds 1,000,000 pounds, this development being attributed to the importations through Belgium for account of French consumers.

UMBRELLAS FOR RUBBER TREES.

The efforts of inventors to discover new uses for rubber are eclipsed by the innovations offered to its producers. Among patent specifications recorded in the "Ceylon Observer" of recent date, may be mentioned an umbrella shaped shield, affixed to the trunk of a tree at a convenient height, in such a manner as to shed water that might flow down the stem and interfere with the tapping operation, combined with a curtain to complete

the protection. Another inventor proposes to deprive the air circulated in rubber drying chambers of its moisture, by causing it to pass through a spray of chloride of calcium or other suitable hygroscopic solution, so that the air will enter the drying chamber as free as possible from moisture.

CEYLON'S PROPOSED EXPORT TAX ON RUBBER.

A resolution has been proposed in the Ceylon Government Council to establish an export tax on rubber of 0.75 rupee (24 cents) per 100 pounds. This proposed duty has met with local opposition, rubber merchants claiming that if in addition to the export duty paid on most of the rubber shipped into Ceylon from the Federated Malay States, India, etc., an extra charge of 24 cents per 100 pounds should be imposed upon rubber reshipped from the island, it will be very likely to go elsewhere. It is also stated that the enforcement of this tax would impose a hardship on the rubber exporters, who have already contracted for 1914 future sales without having taken into consideration any added export duties.

CASTILLOA PRODUCTION IN JAVA.

Among the papers to be read at the 1914 Rubber Congress at Batavia, is one contributed by the Central Java Testing Station at Salatiga, on the cultivation of the *Castilloa* tree in Java.

COMPAGNIE DU KASAI GIVING UP RUBBER?

A report in the Belgian press states that the above company is giving up the rubber business to devote its attention to mining and agriculture. Its surplus is said to have at one time equaled \$2,600,000.

NEW RUBBER SECTIONS AT AMSTERDAM DOCKS.

Two new sections are being constructed at the Amsterdam Docks for the accommodation of the rubber trade, at a cost equalling \$18,000. It is in contemplation in this way to increase the facilities for inspecting rubber at the above-named port.

BUDGET OF NETHERLANDS INDIA.

A legislative measure is before the Dutch Second Chamber which devotes a sum equalling \$360,000 to the reorganization of the official staff at the principal points in the Dutch Indies. The realization of the project is expected to take four years.

NEW SCALE OF CONGO RUBBER EXPORT DUTIES.

The following new scale of export duties on rubber has been published in the "Official Journal of the Belgian Congo" (denominations converted into American equivalents):

From grasses—

Not exceeding 27 cents per pound.....Free
Over 27 cents per pound.....2¼ cents per pound

Free or vine rubbers—

Not exceeding 45 cents per pound.....2¼ cents per pound
45 to 63c. per pound....2¼ cents per pound
63 to 72c. per pound....4½ cents per pound
72 to \$1.08 per pound....9 cents per pound
Over \$1.08 per pound.....11½ cents per pound

*Plantation rubber*Free

These rates (which are to be revised quarterly) are intended to place the Congo export duties in harmony with the present selling prices of rubber.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

RUBBER NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent

A NOTEWORTHY feature in connection with the progress of the rubber plantations in this colony is the fact that a few Ceara rubber trees (*Manihot Glaziovii*) have now arrived at a tappable age and size. A writer in the "Chronicle" refers to this fact and points out that Mr. R. N. Lyne, now Director of Agriculture in Ceylon, who was formerly Director of Agriculture in Mozambique and Zanzibar, in the course of a recent report, deals with the correct method of obtaining latex from the *Manihot* tree; which, of course, differs essentially from the manner adopted in the case of Pará trees. He says:

"The principle of stabbing or pricking is now generally accepted as the most successful system for the East Coast of Africa, but it is important that this system should be applied in the right manner. The stabs should be made with the flat of the knife held horizontally, not vertically . . . and they should be made close together. The trunk of the tree may be divided for the purpose of tapping into two or three parts, vertically, each part being sub-divided laterally into three or four sections according to the girth of the tree. . . . Tappings may follow one another for three or four days, and then an interval of a fortnight or twenty days allowed to intervene. This may continue for as long as the tree is in leaf, which may be, perhaps, nine months out of twelve. A 3 per cent. solution of acetic acid brushed on the trunk of the tree before tapping may be used as a coagulating mixture, but carbolic acid, which makes the rubber harder, is now being used in German East Africa either by itself or mixed with acetic acid."

PROGRESS IN TRINIDAD.

The world of rubber, as a rule, devotes but little attention to those countries where rubber growing is only in the experimental stages. In these days the struggle for supremacy between Brazil and the East claims the general attention. It is interesting, however, to note what is being done in our neighboring colony of Trinidad, where a little progress is being made. The extent of that progress is described fully in a report just issued by Mr. A. E. Collens, Assistant Government Analyst and Officer in Charge of the special experiments. This report informs us that rubber plants were introduced into Trinidad as far back as 1876. In that year, two *Hevea Brasiliensis* plants were received from Kew Gardens, London, and planted in the local Botanic Gardens. Records published four years later refer to them as being over twenty feet high. In 1878, *Hevea Guyanensis* was introduced, and in 1880, *Hevea pauciflora*, *Castilloa elastica*, and a number of *Landolphia* plants.

A couple of *Hevea* trees then planted are now over eighty feet in height, their yield is comparatively high, and the latex is of good quality. Other varieties than those mentioned were introduced at later periods, but only the *Hevea* plants have thriven.

As regards the latest experiments, we have it from the report that last year experimental work was conducted on twenty-five trees, which are said to be growing on extremely poor soil, in districts where the average annual rainfall is about sixty inches.

"Some of these trees," Mr. Collens says, "are more advanced and larger in girth than the rest, and it is possible that the smaller ones may be supplies put in to replace others. The trees at St. Clair were originally interplanted among *Castilloa* rubber, but soon outstripped it, and the *Castilloa* trees were accordingly cut down. Situated among these trees are some which bear distinctive features. . . . Their salient differences are: bark, coppery or rust colored, instead of gray; bark, thin and usually only slightly over a quarter inch in thickness, in some cases much less; latex, creamy yellow; rubber, slightly sticky and inferior in elasticity; leaves, semi-transparent, with reticulated or criss-cross veins, especially noticeable when the

sunlight is passing through the leaves; seeds, larger than those of *Hevea Brasiliensis*, round-angled grayish blotched, and somewhat elastic or yielding when pressed. . . . General characters of tree: tall, good growth, umbrageous, fairly dense foliage."

The report further states that eight additional trees, of a similar type to the above, when tapped, yielded in two months, 47.4 ounces of dry rubber, being an average of 5.9 ounces, approximately. A trial shipment of what is described as "inferior rubber" was recently made and realized \$1.02 per pound, when Fine Pará was selling at \$1.08 and upward.

"The biscuits," continues the report, "were prepared by coagulation with a dilute solution of sulphuric acid, and at the International Rubber Exhibition in New York last year were reported on as follows: 'Fine, well-prepared, smoked *Hevea* biscuits in excellent condition. These biscuits show little room for improvement.'"

"Specimens of blocked sheets, prepared by immediate coagulation either by pyroligneous, acetic or sulphuric acids, were reported on by the examiners appointed for the West Indian exhibits as follows: 'Good tough *Hevea* sheets, apparently excellent quality, some paler than others.' The biscuits prepared by slow coagulation with sulphuric acid were stated to be: 'Fine smoked *Hevea* biscuits, good color and thickness and in excellent condition . . . about the best *Hevea* on the Stand.' For those made with lime juice, pyroligneous acid and sulphuric acid, without smoking, the report was: 'Fair average quality, unsmoked *Hevea* biscuits.'"

According to the tone of the report as a whole, we find a record of good qualities of rubber, but small yields.

BALATA.

The balata season may now be said to be practically over, and it is extremely doubtful whether we shall see many more balata seasons. As compared with last year, of course, the yield this season has been good; the drought of last year practically suspending bleeding operations. There is as yet no intimation of any more local balata companies ceasing operations.

DIMINISHED REVENUE FROM SURINAM IMPORT DUTIES.

Reports from Surinam are to the effect that the receipts from import duties for the six months ending June last amounted to \$32,000 less than for the corresponding period of 1912.

This falling off is attributed to the depressed condition of the agricultural and balata industries. Hopes are, however, entertained that the purchasing capacity of the bleeders will be increased during the second half of the current year, through the larger supplies of balata now coming forward.

RUBBER BUYING AND CULTIVATION IN THE BAHAMAS.

The November issue of this paper contained a news item concerning the enterprise of a Boston syndicate in planting the *Cryptostegia grandiflora* in the Bahamas. Additional information has since been received. The proposed operations will be under the general charge of Dr. Charles S. Dolley, formerly Dean of the Biological Department of the University of Pennsylvania, who has lately been associated with several companies in Mexico City as Industrial Biologist and Chemist. He is assisted by Mr. W. M. Musgrave, an industrial chemist of Mexico City. Members of the syndicate already control about 25,000 acres of land in Mexico. Owing, however, to the unsettled conditions in that country, it was decided to make the first attempt to utilize this plant on a commercial scale in the Bahama Islands.

AUTOMOBILES IN URUGUAY.

It is estimated that there are about 2,500 motor cars in Uruguay, one-half of the number being in Montevideo. This fact is attributed to the hundred miles of macadamized roads which traverse the agricultural parts of the country. American machines are said to number about one-half of the total.

RUBBER PLANTING IN THE DUTCH EAST INDIES.

JAPAN is taking a lively interest as to rubber planting in the East generally, as a guide regarding Japanese investments in other parts of the Orient, and in view of the possible development of that industry in Japanese territory.

An instance of this is afforded by the report sent to his government by the Imperial Japanese Consul at Batavia, in anticipation of the Batavia Exhibition of 1914. The report contains the following interesting statistics:

STATISTICS OF THE DUTCH INDIES, JANUARY, 1914.

Java.			
	Plantations in Java.	Bouws.*	Trees.
Private	332	124,400	500,000
Official	.....	11,610	.....
Grade of trees, private plantations:			
Para	.....	100,400	213,000
India Rubber (unclassified).....	.....	9,500	51,000
Castilloa	.....	3,140	186,000
Manihot	.....	5,300	50,000
		124,400	500,000

(*1 bouw = 1.75 acre.)

SUMATRA.

Official reports of the rubber planting industry in the State of Ringat and the other centers showed, in the beginning of 1906, 6,140 acres; 1911, 160,000 acres; 1912, 220,000 acres, and in 1913, 280,000 acres. For comparison, the figures of the Malay Peninsula are quoted: 1906, 100,000 acres; 1913, 452,000 acres.

DEVELOPMENT OF INDUSTRY.

The area available for rubber plantations is ample, but operations are impeded by shortness of labor and lack of communications. A tendency is being manifested to convert tobacco fields into rubber plantations, owing to the low price of the former article and the financial strain of holding that staple.

Plantations were tried at various elevations up to 1,000 feet above sea level; the growth being very fast, as the soil is fertile and temperature and rainfall adapted for rubber planting. Diseases arising from worms are unknown in this district. With the exception of damage from hurricanes to the trunks of rubber trees, it is exempt from weather troubles.

INVESTMENTS.

Present investments in Sumatra rubber plantations represent about 52 millions of dollars, three-fourths of which amount was invested after 1910. The estimated cost of planting equals about \$525 per acre. The cultivation of 1,750 acres, including planting and trimming trees up to the beginning of the tapping period (4 years), is estimated to represent about \$120,000. Rubber planting is said to be more profitable than in the British Malay States, owing to exemption from export duty and to exporters being more favorably situated as to currency.

In the Dutch Indies there are said to be 548 plantations, of which 332 are in Java and 216 in other Netherlands possessions.

PLANTING AND LABOR.

Para rubber is planted one tree in a space of 20 feet square, or about 108 trees to the acre. The methods of cultivation and coagulation are the same as in Ceylon and the Malay Peninsula. Workers are chiefly recruited from Java, their usual term of employment being three years. The Javanese workers receive per day the equivalent to 12 to 14 cents American.

The yield from 37,000 six and one-half year Para trees in Ringat was 3.42 pounds of crude rubber per tree for eight months, 800 trees of eleven years' growth giving for eight months seven pounds of rubber each. The crude rubber product of Sumatra was estimated in 1911 as 1,700 tons and by 1919 is expected to reach 44,000 tons.

THE CENTRAL SELLING AGENCY.

According to the English financial press, the scheme for the establishment of a central rubber selling agency has received additional support from the invitation extended by the Malacca Plantations, Limited, to other rubber plantation companies to co-operate in the movement for a general selling agency. The Malacca company is shown by statistical returns to be the largest of the plantation corporations, having a total area of 24,717 acres, of which 15,000 are planted. Its output ranks first among those of the producing companies, the figures for twelve months, in pounds, having been: 1907, 7,000; 1908, 46,890; 1909, 236,969; 1910, 387,695; 1911, 1,074,906; 1912, 2,180,000.

That this leading company should have taken such a part in the new proposal augurs well for its success. Several firms of prominent rubber brokers have promised their support and will, it is expected, influence their principals in the same direction.

Actual and tentative promises of support have been received by the Malacca company from the representatives of 100 companies, with a combined capital of \$50,000,000, or between one-fifth and one-sixth of that invested in the sterling companies.

Mr. L. T. Boustead, in the course of a recent speech, remarked that as one of many remedies for present conditions, the Central Selling Agency, combined with the suggested standardization of plantation rubber, should be a power for good, if properly controlled, sufficiently supported, adequately financed and run *pro bono publico* rather than for the benefit of any one or more groups. In fact he looked on the standardization proposal as being nearly as important as the central agency. In either form, the plan would steady the market, but a central agency cannot alter the laws of supply and demand. It might control the supply, but how about the demand? What is wanted is to increase it in proportion to the increasing supply. In conclusion he remarked: "What we need is a rubber trust, not for plantations, but for financing the manufacture of our products."

IS PLANTATION RUBBER OVER-PREPARED?

Mr. G. H. L. Wharton, in a recent letter to the "Financial News," of London, questions the advantage of subjecting plantation rubber to the many processes of preparation. The manufacturer buys Fine Hard Para and the admittedly inferior Ceara and Castilloa in a rough-and-ready condition and is asked why he must have plantation rubber in a highly prepared state. Mr. Wharton suggests that if the rubber was simply cured and left an adequate time to dry, it would have a much better chance against its rival from Brazil.

INCREASED STOCKS OF INFERIOR WILD RUBBER.

A comparison of the stocks of inferior grades of wild rubber for three years shows a considerable increase, thus indicating that demand is falling off:

LIVERPOOL STOCKS.	1911	1912	1913
	Tons.	Tons.	Tons.
Peruvian	459	315	560
Maniçoba, Ceara, etc.	216	206	388
African	332	184	352
Total Liverpool	1007	705	1250
	418	405	951
Total	1425	1110	2201

The market has evidently little use for these classes of rubbers while the best grades are obtainable at existing prices.

"The Financier" remarks that this accumulation of lower grade wild rubber can hardly be viewed with indifference, but unless absorbed or destroyed will act as a serious drag on prices. The withdrawal of the Kasai Company from the Congo rubber trade is understood to have been caused by the poor prices obtained. The anticipation has been expressed that the withdrawal of the company will have a favorable effect upon the market.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED OCTOBER 7, 1913.

- N**^o. 1,074,595. Bathing shoe. A. Aumont, Montreal, Quebec, Canada.
 1,074,780. Syringe. J. H. L. Eager, Brooklyn, N. Y.
 1,074,817. Life preserver. E. Russell, Enid, Okla.
 1,074,846. Device for promoting deep breathing. C. F. Dickman and J. P. Dickman, Dayton, Ohio.
 1,074,881. Dry process in a graduated, soluble, and soluble process of preparing the same. Hans Lyncke, Berlin, Germany.
 1,074,899. Wheel tire. C. L. Schwarz, Philadelphia, Pa.
 1,074,928. Electric heating element. T. M. Caven, assignor to A. J. Lindemann & Hoverson Co.—both of Milwaukee, Wis.
 1,074,979. Milking apparatus. Otto G. Rieske, Beaver Dam, Wis., assignor to A. J. Euchenhofner, Indianapolis, Ind.
 1,075,122. Life saving device. J. Scarlett, Seattle, Wash.
 1,075,168. Elastic road wheel. J. Spyker, Amsterdam, Netherlands.
 1,075,303. Interchangeable resilient heel. H. P. Roberts, Boston, Mass.

13,626. Vehicle tire. M. C. Overman, New York.

- 61,882. Felten & Guillaume Carlswerk Actien Gesellschaft, Mulheim-on-the-Rhine, Germany. The word *Neptune*. Insulated cables, etc.
 70,670. Mystic Rubber Co., Medford, Mass. The initials *D M D*. Rubber bathing caps, etc.
 71,913. The Imperial Merchandise Co., Perry, Ohio. The word *Imperial* across front of crown. Jar rings.

ISSUED OCTOBER 14, 1913.

- 1,075,345. Pneumatic tire. F. C. Feiker, Racine, Wis.
 1,075,501. Demountable rim for pneumatic tires. R. P. Scott, Cadiz, Ohio.
 1,075,688. Spring wheel. H. Boardman, Des Moines, Iowa.
 1,075,801. Tire rack. B. L. Waters, assignor to Lyon Metallic Mfg. Co.—both of Aurora, Ill.
 1,075,822. Dating machine. E. E. Gregory, Central City, Ky.
 1,075,824. Portable wall paper hanger. A. C. Harry, Portsmouth, Ohio.
 1,075,831. Elastic welling. S. Kops, assignor to Kops Bros.—both of New York.
 1,075,838. Spring wheel. W. L. Mann, St. Joseph, Mo.
 1,075,906. Sanitary sand blast helmet. W. Duncan and J. A. Spangler, Attica, Ind.
 1,075,917. Adjustable shoe for auto tires. W. A. Jackson and E. L. Sherbondy, Los Angeles, Cal.
 1,075,930. Protective overboot. M. W. Murray, St. Joseph, Mo.
 1,075,992. Vehicle tire. A. W. Savage, Duarte, Cal.
 1,075,993. Vehicle tire. A. W. Savage, Duarte, Cal.
 1,076,003. Spring wheel. W. J. Cook and P. Cook, Albany, N. Y.

- 44,723. Vehicle tire. W. W. Duncan, Watertown, Mass, assignor to Hood Rubber Co., Boston, Mass.
 44,734. Tire. G. E. Starr, San Francisco, Cal.
 44,735. Tire. G. E. Starr, San Francisco, Cal.
 44,736. Tire. G. E. Starr, San Francisco, Cal.
 71,675. Shavers & Sons, New York. The word *Shavers* on boots, shoes, etc.
 72,179. The Tire Treating Co., Detroit, Mich. The words *New Era*. A compound for sealing punctures in inflatable tires.
 72,941. Hercules Rubber Co., New York. The word *Hercules* on tires for vehicle tops.

ISSUED OCTOBER 21, 1913.

- 1,076,024. Cushion tire. C. M. Culp, South Bend, Ind.
 1,076,031. Contracting band for knickerbockers. D. Gamble, New York.
 1,076,045. Hose coupling. A. B. Lemon and C. C. Culver, Alluwe, Okla.
 1,076,060. Ballast device. R. A. D. Preston, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.
 1,076,127. Automobile tire. C. Krikava, Burchard, Neb.
 1,076,128. Hose nozzle. E. Kupperle, St. Louis, Mo.
 1,076,178. Wheel of road vehicles. C. K. Welch, Coventry, England.
 1,076,195. Manufacture and production of a caoutchouc like material. K. Delbrück and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
 1,076,196. Substance similar to caoutchouc and process of making same. K. Delbrück and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
 1,076,221. Dilating syringe. A. L. Miner, Bellows Falls, Vt.
 1,076,238. Detachable rim for vehicle wheels. A. Schick, assignor to Schick Wheel & Tire Co.—both of Wheeling, W. Va.
 1,076,239. Vehicle wheel. A. Schick, assignor to Schick Wheel & Tire Co.—both of Wheeling, W. Va.
 1,076,254. Resilient wheel. W. Wheeler, Des Moines, Iowa.
 1,076,265. Loop for hose supporters. S. Buyer, Yonkers, N. Y.

- 1,076,267. Tire valve. F. B. Carlisle, Malden, assignor to Standard Auto Valve Co., of Massachusetts.
 1,076,287. Abdominal supporter. F. Z. Husar, Chicago, Ill.
 1,076,345. Tire shoe. A. S. Bullock, Aitkin, Minn.
 1,076,349. Rubber like substance and process of making same. H. A. Chalk and L. J. Lippin, New Orleans, La., assignors to C. W. Benedict, St. Louis, Mo.
 1,076,425. Syringe. J. J. Holland, Philadelphia, Pa.
 1,076,430. Demountable rim. W. F. Jenkins, Richmond, Va.
 1,076,490. Massage treatment. H. Dreuw, Berlin, Germany.
 1,076,526. Wire coating and spooling machine. M. D. Shiverick, assignor to W. E. Milbank—both of Albany, N. Y.
 1,076,575. Process for producing beta-gammadimethylethylene. F. Hoffmann, K. Delbrück and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
 1,076,591. Wheel with multiple and balanced rims. H. Lottie, St. Jean d'Angely, France.
 1,076,603. Hosiery. D. O'Donnell, New York.

Trade Marks.

- 64,779. Felten & Guillaume Carlswerk Actien Gesellschaft, Mulheim-on-the-Rhine, Germany. The initials *F G* over the word *Neptune* in circle. Air tubes for wheel tires, etc.
 71,007. Ungarische Gummiwaaren Fabriks Actiengesellschaft, Budapest, Austria Hungary. The word *Tauril*. Hollow and solid rubber tires.
 71,506. J. W. Buckley Rubber Co. New York. The word *Steamship*. Rubber tubing, rubber hose, etc.
 72,888. C. J. Higley, New York. Oblong of plaid. Hose supporters.

ISSUED OCTOBER 28, 1913.

- 1,076,675. Hose supporter. E. Jennings, New York.
 1,076,719. Emergency automobile tire. L. M. Tichenor, Owensville, Ind.
 1,076,722. Device for practising golf putting. C. M. Treadwell, London, England.
 1,076,730. Separable rim for automobile wheels. W. A. Wirth, St. Louis, Mo.
 1,076,735. Wheel. W. E. Babbitt, Worcester, Mass.
 1,076,744. Demountable rim for pneumatic tires. C. R. Cantrell, St. Louis, Mo.
 1,076,004. Non-skidding device. W. G. Murray, San Francisco, Cal.
 1,076,914. Resilient wheel. E. A. Schlairet, Mt. Vernon, N. Y.
 1,076,916. Tire. E. J. Shaut and W. A. Dunham, Jackson, Mich.
 1,076,981. Tire deflating cap. J. H. Hard, Osmond, Neb.
 1,077,011. Deflating device. W. F. Sprick, Stickney, S. D.
 1,077,044. Automobile wheel and tire. G. M. Davenport, Keo, Ark.
 1,077,085. Vehicle tire. R. L. Leach, Honolulu, Hawaii.
 1,077,121. Resilient ball. F. A. Cigol, Paterson, N. J.
 1,077,125. Fabric for tire casing. H. J. Doughty, Edgewood, R. I.
 1,077,127. Process of forming a tire casing. H. J. Doughty, Edgewood, R. I.
 1,077,128. Vehicle tire. H. J. Doughty, Edgewood, R. I.
 1,077,029. Endless tread for automobile wheels. T. Douglas, New York.
 1,077,140. Balata insulated submarine cables. F. Jacob, Westcomb Park, England, assignor to Siemens & Halske A. G., Berlin, Germany.
 1,077,143. Abrading disk. C. Krug, Frankfort-on-the-Main, Germany.
 1,077,176. Vehicle tire. J. H. Tucker, Petersburg, Va.
 1,077,177. Storm coat. A. J. Vagas and M. F. Vagas—both of Youngstown, Ohio.
 1,077,233. Vehicle wheel rim. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

Design.

- 44,783. Bathing cap. E. A. Guinzburg, New York.

Trade Marks.

- 61,887. Felten & Guillaume Carlswerk Actien Gesellschaft, Mulheim-on-the-Rhine, Germany. The word *Neptune*. Rolls, molds, plugs, etc.
 64,780. Felten & Guillaume Carlswerk Actien Gesellschaft, Mulheim-on-the-Rhine, Germany. The initials *F G* over word *Neptune* in circle. Molds, rolls, plugs, etc.
 68,231. United & Globe Rubber Mfg. Co., Trenton, N. J. The word *Globe* written through center of illustration of globe. Non-metallic tires.
 70,981. Northern Shoe Co., Duluth, Minn. The word *Farmpruf*. Boots and shoes, etc.
 72,193. Phelps Mfg. Co., Providence, R. I. Small illustration of Chinaman applying liquid dressing to shoe.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which is the date of publication hereof was in 1911.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 1, 1913.]

- 13,461 (1912). Jackets and covers for wheel tires. W. C. Platts, Manor House, Kentish Town, and F. W. W. Newmarket street—both in London.
- 13,475 (1912). Life saving jackets. G. M. Boddy, 8 Leadenhall street, and W. C. Platts, 44 Piccadilly, West Scotland—both in London.
- 13,476 (1912). Tread bands for wheel tires. G. Milse, 69 Aufden Häfen, Bremen, and A. Wohleken, Lehe near Bremerhaven—both in Germany.
- 13,481 (1912). Inflatable life saving apparel. J. Schwab, 434 Spadina avenue, Winnipeg, Canada.
- 13,507 (1912). Jackets and covers for wheel tires. A. E. Wale, Coleshill, near Birmingham, and Wales Invulnerable Tyre Syndicate, Broad Street House, London.
- 13,539 (1912). Air tubes and chambers for wheel tires. M. G. Fossi, 6 Piazza Peruzzi, Florence, Italy.
- 13,541 (1912). Golf balls. H. G. Pocke, 55 Kent Road, Gravesend, and C. T. Lehmann, 4 Monument street, London.
- 13,563 (1912). Inhalers. C. G. Cenatro, 4 Calle de la Abada, Madrid.
- 13,591 (1912). Caoutchouc substances. P. A. Newton, 6 Brems buildings, Chancery Lane, London.
- 13,613 (1912). Air tubes and chambers for tires. H. K. Heide, 44 Lucile Grahnstrasse, Munich, Germany.
- 13,638 (1912). Making solid rubber tires. R. Bridge and J. Bridge, Castleton Ironworks, Lanes.
- *13,652 (1912). Life saving suit with rubber shield. T. E. Aud, Herndon, Va., U. S. A.
- 13,687 (1912). Apparatus for detecting and closing tire punctures. H. W. Lake, 7 Southampton buildings, London.
- 13,754 (1912). Horseshoes with rubber pads. G. Dugher, Awkley, near Doncaster.
- 13,809 (1912). Apparatus for treating rubber plants. S. Goldreich, 2 Broad Street Place, and J. L. Palmer, 18 Ropemaker street—both in London.
- 13,819 (1912). Rubber lined clip for suspending umbrellas, etc., for display. E. H. Ledger, Allcott House, Wellington, Shropshire.
- 13,833 (1912). Apparatus for detecting and closing punctures in pneumatic tires. J. T. McGuire, 69 Northcote street, Arthur's Hill, Newcastle-on-Tyne.
- 13,845 (1912). Spring lining for outer tire cover. A. T. Edwards, P. O. Box 219, Cape Town, South Africa.
- 13,957 (1912). Horse boots and bandages adjusted by means of rubber straps. H. W. A. Salter and J. O. Salter, 23 High street, Aldershot, Hampshire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 8, 1913.]

- 14,012 (1912). Tire vulcanizer. Dunlop Rubber Co. and J. V. Worthington, Manor Mills, Salford street, Aston, Birmingham.
- *14,057 (1912). Hand stamps. O. Ferguson, Porter, Minn., U. S. A.
- *14,062 (1912). Corsets with elastic skirt straps. D. Kops, 435 Riverside Drive, New York, U. S. A.
- 14,180 (1912). Dental plate with vulcanized rubber stem. J. Dukes, 121 New Chester Road, New York, Chesapeake.
- 14,309 (1912). Tread bands, projections and surfaces for wheel tires. D. Marshall, 30 Winchcombe street, Cheltenham, Gloucestershire.
- 14,334 (1912). Corset waist with elastic hose supporters. Spirella Co., Letchworth, Hertfordshire.
- *14,335 (1912). A method of securing devices. J. A. Baldwin, 5 West street, Maynard, and L. D. Apsley, 21 Pleasant street, Hudson—both in Massachusetts, U. S. A.
- 14,537 (1912). Gutta percha embossing die. G. Moncany, 10 Cite Joli, Paris.
- 14,556 (1912). Synthetic caoutchouc. P. A. Newton, 6 Brems buildings, Chancery Lane, London.
- 14,619 (1912). Tread bands for wheel tires. P. V. J. Jeppesen, 20 Jens Benzonsgade, and V. Petersen, "Aldersbaab," Myborg, Landevej—both in Odense, Denmark.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 15, 1913.]

- 14,665 (1912). Rubber substitute. D. d'Ameida, 16 Cuppage Road, Singapore, Straits Settlements.
- 14,720 (1912). Suction or force cup comprising an elastic dome. H. Macfarlane, 317 High Holborn, London.
- *14,737 (1912). Corsets with elastic straps. D. Kops, 435 Riverside Drive, New York, U. S. A.
- 14,757 (1912). Detachable rim attachment to wheels. Daimler-Motoren-Ges, Fabrikstrasse, Untertürkheim, near Stuttgart, Germany.
- *14,761 (1912). Air tubes and chambers for wheels. W. P. Gordon, H. P. Barhite and W. H. Barhite, Lakeland, Fla., U. S. A.
- *14,795 (1912). Jackets and covers for wheel tires. J. Lend, 53 West Jackson Boulevard, Chicago, Ill., U. S. A.
- *14,854 (1912). Spring wheels with continuous outer rigid ring and pneumatic, rubber ring and like hubs. H. O. Shockley, Darlington, Wis., U. S. A.
- *14,865 (1912). Tire attachments to rims. W. D. McNaul, 448 East Broadway, Toledo, Ohio, U. S. A.
- 14,947 (1912). Waterproof sheet covers for seats, hand bags, etc. B. G. Cope, Bradford House, Bloxwich, near Walsall.

- 15,073 (1912). Mud guards with rubber plate for vehicles. F. W. Kohler, 18 Danmarksgade, and H. T. Bode, 238 Ostre Fasanvej—both in Copenhagen.
- 15,100 (1912). Wearing apparel. A. W. Glover, Newton Road, Leeds.
- 15,115 (1912). Tread bands for wheel tires. A. W. Torkington, 11 Queen Victoria street, and Wale's Invulnerable Tyre Syndicate, Broad Street House—both in London.
- 15,145 (1912). Life saving buoys. F. W. Kowalski, 19 Juliusstrasse, Lodz, Russia.
- 15,153 (1912). Detachable rim attachments to wheels. Daimler-Motoren-Ges, Fabrikstrasse, Untertürkheim, near Stuttgart, Germany.
- *15,159 (1912). Wheel tires. L. J. Tetlow, 65 Piper Road, West Springfield, Mass., U. S. A.

[APPENDIX TO ABSTRACTS OF SPECIFICATIONS.]

[In place of 613, redated July 6.]

- 613 (1911). Wheel tires. W. E. Muntz, Royal Automobile Club, Pall Mall, London.

[In place of 2,895, not yet accepted.]

- 2,895 (1911). Damping pads with collapsible bulb. E. H. Horstmann, 10 Widcomb Crescent, Bath.

[In place of 6,846, redated August 28.]

- 6,846 (1912). Driving belts. E. Lycett, Bromley street, Birmingham.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 22, 1913.]

- 15,285 (1912). Damping pad with threads held by rubber band. A. R. M. Keefe, 52 Newhall street, and P. R. Erskine, 101 Commercial Road—both in Swindon, Wiltshire.
- 15,347 (1912). Soft rubber button for hose suspenders. R. B. Ransford, 24 Southampton buildings, London.
- 15,350 (1912). A rubber cone for phonographs, etc. F. J. Empson, 10 Castlereagh street, Sydney, Australia.
- 15,455 (1912). A tread band for attachment to the outer cover of a tire. E. C. R. Marks, 57 Lincoln's Inn Fields, London.
- 15,474 (1912). Self-filling rubber reservoir pens. P. Hayman, 8 Long Lane, London.
- 15,526 (1912). Elastic lining grip for shoes. G. T. Hawkins, Waukerz Boot Factory, Overstone Road, Northampton.
- 15,560 (1912). Vehicle wheels. T. H. Holroyd, 34 Morley Road, East Twickenham, Middlesex.
- 15,572 (1912). Reservoir pens. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
- 15,608 (1912). Vehicle wheels with resilient blocks. W. T. G. Ellis, 150 Bothwell street, Glasgow.
- 15,641 (1912). Spring wheels with continuous outer rigid ring and rubber ring. J. Guerriero, 5 Square de Messine, Paris.
- 15,680 (1912). Process for manufacturing india rubber springs or elastic diaphragms. A. G. Spencer, 77 Cannon street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, OCTOBER 29, 1913.]

- 15,728 (1912). Diving apparatus with rubber air bags. L. Durland, 55 Piazza Olivuzza, and M. Bembina, 16 Via Guiseppe Piazza ai Lotti—both in Palermo, Italy.
- 15,751 (1912). The outer cover of a pneumatic tire. H. P. Plicht, 14 Sedanstrasse, Leipzig, Germany.
- 15,844 (1912). A non skid tire protector. R. Müller, 26 Schiljanska street, Kiew, Russia.
- 15,896 (1912). Rubber covered protectors for shoes. T. H. B. Gayner, 15 Salisbury House, Highbury Corner, London.
- 15,944 (1912). A knitted fabric for tire covers. W. E. Mutz, 89 Pall Mall, London.
- 15,984 (1912). Rubber coated rolls for paper machines. E. Fullner, Herischdorf, near Warmbrunn, Schlesien, Germany.
- *16,047 (1912). A plastic composition for filling tires. T. P. Day, Fort Worth, Texas, U. S. A.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 456,444 (April 8, 1913). Shock-resisting pneumatic tires for automobiles and other vehicles. P. Sikirizza and A. Gardun.
- 456,476 (April 9). Process for repairing burst tires. P. Minaud.
- 456,497 (June 19, 1912). Air chamber for tires. M. Leblant.
- 456,559 (April 11, 1913). Mud guards for vehicle wheels. C. Lefevre and H. Warlazier.
- 456,584 (June 22, 1912). Fittings for pneumatic tires. Mendes de Almeida.
- 456,486 (April 9, 1913). Process for increasing the yield of Pará rubber trees. Treasury of Cameroon Protectorate.
- 456,586 (June 22, 1912). Synthetic rubber. C. E. Anquetel.
- 456,607 (April 12, 1913). Improvements in vehicle tires. A. A. Picard.
- 456,680 (April 15). Elastic wheel. M. D. McGown.
- 456,690 (June 24, 1912). Portable press for fitting rubber tires on wheels. Delbays & Cie., Ltd.
- 456,839 (June 27). Elastic tires. C. Morel.
- 456,847 (April 19, 1913). Mud guards for automobiles and other vehicles. Desobry & Librecht.
- 456,998 (January 16). System and process of making linen carcasses for tire covers. Saracio Company.
- 457,030 (July 2, 1912). Elastic tires for automobiles and other vehicles. H. Farjas.
- 457,047 (April 2, 1913). Pneumatic heel and tire. J. Anthony.

- 457,062 (April 11). Rubber tire with protective cover. P. Dietz.
 457,094 (April 24). Improvements in covers of pneumatic tires. J. P. Tye and C. Hanks.
 457,147 (July 4, 1913). Improvements in twin pneumatic tires. H. N. J. Portier.
 457,187 (July 5). Mud guards for vehicles. Tahier.
 457,254 (April 25, 1913). Cover for pneumatic tire. P. Perrin.
 457,343 (April 8). Improvements in elastic tires. R. Rousselon.
 457,372 (July 2, 1912). Improvements in anti-perforation tire covers. S. C. Caddy.
 457,417 (May 3, 1913). Mud guards for vehicle wheels. C. Engelking.
 457,440 (July 10, 1912). Improvements in covers for elastic tires. E. Mayeu.
 457,445 (May 3, 1913). Elastic tire. C. G. Lambert.
 457,456 (May 5). Hollow tire. H. Behnisch.
 457,460 (May 5). Tires for vehicle wheels. Donandy.
 457,468 (May 5). Fixing tires on wheels. L. G. Fleming.
 457,476 (May 5). Improvements in elastic tires and in appliances for fitting them. H. Rousselon.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED WITH DATE OF VALIDITY.

- 266,342, Class 81 (September 21, 1912). Process for manufacture of armored hard rubber. Joseph Theodor Szék, Brussels.
 266,402, Class 120 (January 11, 1912). Manufacture of isoprene and its homologues from dipentenes. Dr. Iwan Ostromisslensky and the "Bogatyr" Company, Moscow.
 266,403, Class 120 (July 6, 1912). Process for manufacture of isoprene. Court Gross, Christiania.
 266,153, Class 39b (May 26, 1912). Prevention of resinification in polymerization. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.
 266,242, Class 63e (June 30, 1912). Rubber tires with transverse hollow spaces, over each other. Albert Witzel, Ludwigsburg.
 266,618, Class 39b (November 16, 1912). Manufacture of a product from hard rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.
 266,619, Class 39b (December 25, 1912). Quickening vulcanization of natural or artificial rubbers. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.
 266,887, Class 39b (December 29, 1912). Regenerated rubber from rubber waste containing cellulose. Orrin A. Wheeler, Edward D. Lowenthal and Berthold Lowenthal, Chicago, Ill.
 266,957, Class 39b (April 16, 1912). Substitute for rubber or putty. Thomas Daniel Kelly, Southend-on-Sea.
 266,851, Class 63e (September 11, 1912). Rubber tires with transverse perforations covered from outside. Michael Martin Weiss, Cleveland, Ohio.
 266,895, Class 63e (January 4, 1913). Signal of wind escape from pneumatic tires. Wilhelm Rothe, Reichenbach, Silesia.
 267,419, Class 30d (March 29, 1912). Woven or knitted bandage materials. Dietrich Grote, Nachf. Kempen, Rhine.
 267,277, Class 39b (November 28, 1912). Regeneration of rubber. Dr. Carl Harries, Kiel.
 267,476, Class 39b (October 23, 1910). Manufacture of artificial rubber. Georges Reynaud, Paris.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 258,760 (1912). Rubber pad for preventing excoriation in riding. C. de Klecki, Wielopole 8, Cracow, Austria.
 258,807 (1912). Process of vulcanizing objects of rubber and similar materials. V. Thomas, Rabanese Clermont-Ferrand, France.
 258,991 (1912). Process and appliances for drying materials. G. Desaulles, Rue Georges Sand 21, Paris.
 259,020 (1912). Portable tent. L. Cassis, Rue Marie Henriette, Uccle.
 259,048 (1912). Process and appliance for extracting rubber from parts of vegetables. F. Kempter, Heinestrasse 10, Stuttgart, Germany.

WHEN THE TIRE DEFLATES THE BELL RINGS.

All the experts on tires insist, in season and out of season, that the one chief cause of tire degeneracy is deflation, and that if the motorist would keep his eye constantly on the tire to see that it is properly inflated his troubles would be greatly decreased. A certain inventive genius has come to the assistance of the motorist with a device that renders it unnecessary for him to keep his eye constantly on the tire, as this will do the work for him. It is a small piece of metal in the shape of a "U" and goes over the tire, having two plungers which drop past the rim. When the tire is entirely inflated nothing happens, but when the air begins to escape and the tire to go a trifle flat these two plungers are driven up a little further past the rim and strike a bell. The motorist then knows it's time to insert more air.

FIGHTING FIRE ON SHIPBOARD.

THERE is no place in the world where it is so essential to stop a fire as on shipboard, as it is a case of conquering the fire or going down. Every precaution is taken against the spread of incipient blazes. Among these precautions is the use of the fire-fighting apparatus shown in the accompanying sketch, which con-



FIRE-FIGHTING APPARATUS—SMOKE HELMET CONNECTED WITH AIR BELLOWS.

sists of a smoke helmet attached to a rubber tube at the other end of which there is a fresh air bellows. When it is necessary for one of the crew to take the nozzle of the water hose into a compartment dense with smoke, where breathing would be impossible or exceedingly difficult, he has only to adjust this smoke helmet to his head, while a comrade outside works the bellows and keeps him supplied with an abundance of fresh air.

WATER PAILS OUT OF OLD INNER TUBES.

A contributor to the "Automobile Trade Journal," who has an inventive turn of mind, makes the following suggestion for utilizing old inner tubes as collapsible water pails:

"Altho collapsible water pails can now be purchased very cheaply, it is well to know how easily a useful one can be made without any expense. If three or four feet of good rubber is selected from an old inner tube a water pail of the desired length can be made by cutting off a portion of the tube and cementing one end under pressure so that it is closed watertight. Such an article as this can be carried in almost any part of the car, and may prove very useful in filling a radiator from a roadside stream."

Report of the Crude Rubber Market.

HAVING been on October 11 the price of 3s. 5d. in the London market, fine Pará had dropped by October 27 to 3s. 1½d. An alternation of slight gains and losses brought it by November 17 to 3s. 4d., close to the price of October 11. After keeping for a few days at about this level, a reduction to 3s. 2d. had taken place by the 22d, the time of writing. Thus the month ends for Pará rubber in London about where it began.

Plantation, which started the month at about 2s. 2d., stood at 2s. 3d. on November 8, from which point it gradually rose to 2s. 6d. on the 19th, standing on the 22d at 2s. 4¾d.

Comparing the movements of the last three months, the following results are found:

1913.	Upriver	Fine Pará.	Plantation.	Difference.
August 27	3s. 5d.	2s. 8d.	1s. 1d.	
September 27	3s. 7½d.	2s. 3½d.	1s. 4d.	
October 4	3s. 4d.	2s. 1½d.	1s. 2¾d.	
October 11	3s. 5d.	2s. 1d.	1s. 3d.	
October 18	3s. 2½d.	2s. 1d.	1s. 1½d.	
October 27	3s. 1½d.	2s. 2d.	11½d.	
November 1	3s. 1¾d.	2s. 2½d.	11½d.	
November 8	3s. 2½d.	2s. 3d.	11d.	
November 15	3s. 3d.	2s. 4d.	11d.	
November 22	3s. 2d.	2s. 4¾d.	9¾d.	

The purchasing operations of the month have been both cautious and restricted, buyers evincing a desire to limit their action to urgent requirements.

Thus the premium in favor of Pará, which constitutes the principal factor of interest in the market, now stands at a lower rate than at any time since the middle of the year, now being at 9½d. against 11½d. on October 27. In fact plantation has gone up 2d. without any corresponding rise in Pará standard.

Deliveries of plantation rubber in October were 3,055 tons, against arrivals, 3,355 tons. Last year at same time the figures were respectively, 2,116 and 1,993. The increased purchasing capacity of the market is thus proved. The world's visible supply of Brazilian rubber on October 31 was 5,930 tons, against 5,310 tons at the end of September.

Statistics of the 22 series of plantation rubber auctions which took place this year in London before the end of October, show that 18,484 tons were auctioned during the period, against 14,560 during the corresponding months of 1912. Two auctions were held in November. The first one, on the 4th, included 960 tons, as compared with 1,200 tons a fortnight earlier.

Havre reports state that the sale of October 29 resulted in the disposal of 33 tons out of 53 tons offered, prices showing a slight decline. For the sale of November 26, 95 tons were inscribed.

At the Rotterdam sale of November 7, 33½ tons were offered, including 23 tons *Hevea* and 10 tons *Ficus*. The competition was animated and higher prices were established.

The sale at Amsterdam on November 13 led to the disposal of 98 tons out of the 105 tons offered, which realized for *Hevea* 8½ per cent. and for *Ficus* 15 per cent. above valuation. The former constituted 90 per cent. of the quantity.

Out of 415 tons offered in Antwerp on October 22, 343 tons were sold. Congos, which had been neglected, are again receiving the attention of buyers, 149 tons having been sold out of 201 cataloged. Of the plantation rubber offered, 194 tons were sold at an advance equaling ½d. per pound. Antwerp stock at the end of October was about 425 tons, against 556 tons at same time last year.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York one year ago, one month ago, and November 29—the current date:

PARA.	Dec. 1, '12.	Nov. 1, '13.	Nov. 29, '13.
Islands, fine, new.....	95@ 96	66@67	66 @67
Islands, fine, old.....	.....	.....	.....
Upriver, fine, new.....	106@107	73@74	76 @77
Upriver, fine, old.....	113@114	76@80	.....
Islands, coarse, new.....	54@ 55	28@29	29½@30
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	82@ 83	46@47	48 @49
Upriver, coarse, old.....	.....	.....	.....
Cametá	55@ 56	36@37	37½@38
Caucho (Peruvian) ball....	81@ 82	43@44	46 @47
Caucho (Peruvian) sheet	.....	.....	.....

PLANTATION CEYLONS.

Fine smoked sheet.....	111@112	59@60	65 @66
Fine pale crepe.....	106@107	53@54	58 @59
Fine sheets and biscuits....	105@106	51@52	56 @57

CENTRALS.

Esmeralda, sausage	78@ 79	40@41	40 @41
Guayule, strip .....	.....	.....	.....
Nicaragua, scrap	77 @78	37 @39	37 @39
Panama .....	.....	.....	.....
Mexican plantation, sheet....	.....	.....	.....
Mexican, scrap	76@ 77	37@38	37 @38
Mexican, slab .....	.....	.....	.....
Mangabara, sheet .....	.....	.....	.....

Guayule	58@ 59	.....	.....
Balata, sheet	82@ 83	63@64	63 @64
Balata, block	54@ 55	44@45	44 @45

AFRICAN.

Lopori, ball, prime.....	98@ 99	47@48	47 @48
Lopori, strip, prime.....	.....	.....	.....
Aruwimi	87@ 88	37@38	37 @38
Upper Congo, ball red.....	97@ 98	45@46	45 @46
Ikolumba	95@ 96	.....	.....
Sierra Leone, 1st quality....	98@100	45@46	45 @46
Massa, red .....	.....	.....	.....
Soudan Niggers .....	.....	.....	.....
Cameroon, ball	73 @74	33@40	33 @40
Benguela .....	.....	.....	.....
Madagascar, tank	25 @ ..	.....	.....
Accra, flake .....	.....	20@22	20 @22

EAST INDIAN.

Assam .....	.....	.....	.....
Plantation .....	.....	.....	.....
Borneo .....	.....	.....	.....

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, 68 William street, New York,) advises as follows: "During November, the general market conditions regarding commercial paper in the rubber line have practically been unchanged from October, the demand being only moderate at full rates, the best rubber names being 5¾ to 6 per cent., and those not so well known 6¼ to 6½ per cent.

NEW YORK PRICES FOR OCTOBER (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	\$0.73@0.83	\$1.04@1.11	\$1.00@1.12
Islands, fine .....	.67@.72	.99@1.06	.96@1.07
Islands, coarse .....	.28@.29	.53@.56	.56@.63
Cametá .....	.36@.38	.56@.61	.60@.66

STATISTICS PARA INDIA RUBBER (IN TONS).

INCLUDING CAUCHO.

STATISTICS FOR THE MONTH OF OCTOBER

	Pará. Caucho.	1913.	1912.	1911.	1910.
	Tons.	Tons.	Tons.	Tons.	Tons.
Receipts at Pará	1,460	1,670	1,640	1,590	1,590
Shipments to America	1,130	1,360	1,830	1,200	1,200
Shipments to Continent	1,170	1,380	1,680	1,860	1,250
Peats	360	450	150	360	360
Shipments to America	1,460	1,670	1,640	1,590	1,590
American Deliveries	1,130	1,360	1,830	1,200	1,200
Overland Deliveries	1,170	1,380	1,680	1,860	1,250
Liverpool Deliveries	172	1,190	1,198	1,126	716
Continental Imports	80	270	320	10	170
Continental Deliveries	170	150	320	30	150

VISIBLE SUPPLY, 1ST NOVEMBER, 1913.

	Pará. Caucho.	1913.	1912.	1911.	1910.
	Tons.	Tons.	Tons.	Tons.	Tons.
Stock in England, Pará, 1st hands	550	550	190	180	193
Pará, 2nd hands	50	335	190	400	960
Stock in Pará, 1st hands	440	120	190	400	960
2nd hands	920	420	700	60	60
Syndicate	810	960	2,410	280	280
Stock in America	70	180	280	280	280
Stock on Continent	20	40	100	20	100
At Pará	120	910	850	1,300	1,300
At Continent	100	1,200	590	750	750
	4,360	855			

Total Visible Supply, including Caucho, 5,215 4,390 7,130 5,224

CROP STATISTICS—30TH JUNE, 31ST OCTOBER, 1913.

	Pará. Caucho.	1913.	1912.	1911.	1910.
	Tons.	Tons.	Tons.	Tons.	Tons.
Para Receipts	1,460	1,670	1,640	1,590	1,590
Para Shipments to America	4,090	880	4,700	5,580	4,500
Para Shipments to Continent	4,090	880	4,700	5,580	4,500
Overland Deliveries, net	3,070	4,147	3,509	3,181	3,181
Liverpool Deliveries, net	3,950	5,087	6,729	3,470	3,470
America Landings, net	4,960	4,147	6,360	3,470	3,470
America Deliveries, net	5,010	5,520	5,980	3,690	3,690
Continental Imports, net	790	1,350	520	700	700
Continental Deliveries, net	980	1,350	610	650	650

POSITION—1ST NOVEMBER, 1913.

Decrease in Receipts during October, 1913, against October, 1912.....	180
Decrease in Receipts—Crop, July/October, 1913, against 1912.....	40
Decrease in Deliveries—Crop, July/October, 1913, England and Continent, against 1912.....	1,507
Decrease in Deliveries—Crop, July/October, 1913, America, against 1912.....	510
Increase in Visible Supply Pará Grades, against 1st November last.....	505
Increase in Stock, England, October 31st, 1913, against October 31st, 1912.....	505

WM. WRIGHT & CO., Brokers,

21, Mincing Lane, London, E. C.

During the month 80 tons, including 70 tons Caucho, have been shipped from Liverpool to America.

Amsterdam.

JOOSTEN & JANSSEN report [November 13]:

In consequence of the firmer tendency prevailing, today's sale has been very satisfactory. Owners have been able to sell their lots at good prices, in most cases above valuations.

Rotterdam.

HAEVERAAR & DE VRIES report [November 7]:

Owing to the better tone in the market and the higher prices in London, today's sale was very animated, with keen competition. The entire quantity was sold above valuations.

Rubber Scrap Prices.

LAKE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	Nov. 29, '13
Old rubber boots and shoes—domestic	7 1/2 @ 7 1/2
Old rubber boots and shoes—foreign	7 1/2 @ 7 1/2
Pneumatic bicycle tires	4 1/2 @ 4 3/4
Automobile tires	5 1/2 @ 5 1/2
Solid rubber wagon and carriage tires	8 @ 8 1/2
White trimmed rubber	10 @ 10 1/4
Heavy black rubber	4 1/2 @ 4 5/8
Air brake hose	4 3/8 @ 4 3/8
Garden hose	1 @ 1
Fire and large hose	2 @ 2
Matting	6 @ 7
No. 1 white auto tires	6 1/2 @ 7
Foreign auto tires	5 1/2 @ 5 1/2

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA 1913

(IN SHILLINGS AND PENCE PER TON)

January 3, 1913.....	4/7 1/4	June 6.....	3/9 1/4
January 10.....	4/6 1/2	June 13.....	3/9
January 17.....	4 0	June 20.....	3 8
January 24.....	4/5 1/4	June 27.....	3 7
January 31.....	4 4	July 4.....	3 6
February 7.....	4 2 1/2	July 11.....	3 6
February 14.....	4/3	July 18.....	3/9 1/2
February 21.....	4 0	July 25.....	3/8
February 28.....	4/0 1/2	August 1.....	3 8
March 7.....	3 10	August 8.....	3/10
March 14.....	3 11	August 15.....	3/10 1/2
March 20.....	3/11	August 22.....	3/10
March 28.....	3/9 1/2	August 29.....	3/8 1/2
April 4.....	3 0	September 5.....	3/9
April 11.....	3 4	September 12.....	3/8
April 18.....	3/4 3/4	September 19.....	3/6
April 25.....	3 4	September 26.....	3 7
May 2.....	3/5 1/2	October 3.....	3 4
May 9.....	3 8	October 10.....	3/5
May 16.....	3/10	October 17.....	3 3
May 23.....	3/9	October 24.....	3 1
May 31.....	3/8 1/2	October 31.....	3 1

IMPORTS FROM PARA AT NEW YORK.

OCTOBER 25.—By the *Clement* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	373,800	65,200	167,400	55,500=	661,900
General Rubber Co.....		31,600	29,000	10,900=	71,500
Meyer & Brown.....	337,200	51,300	66,200	31,800=	486,500
Henderson & Korn.....	46,500	19,600	25,400	18,500=	110,000
G. Amsinck & Co.....				6,000=	6,000
H. A. Astlett & Co.....	58,400	12,200	2,200	13,700=	86,500
Total.....	815,900	179,900	290,200	136,400=	1,422,400

NOVEMBER 3.—Transshipped from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown.....		2,500	2,000	44,000=	54,400
Johnstone & Whitworth.....			8,600	15,200=	74,400
H. A. Astlett & Co.....	30,000	400	6,700	12,900=	50,000
W. R. Grace & Co.....	8,700	2,300			11,000
G. Amsinck & Co.....	2,000				2,000
Total.....		200	17,300	72,100=	191,800

NOVEMBER 3.—By the *Steph* from Pará and Manáos:

Arnold & Zeiss.....	350,300	63,300	110,100	76,200=	599,900
General Rubber Co.....	109,700	26,400	25,700		161,800
Meyer & Brown.....	120,700	19,100	97,700	71,200=	308,700
Henderson & Korn.....	73,300	26,100	19,600	5,500=	124,500
H. A. Astlett & Co.....			22,400	6,300=	28,700
H. A. Astlett & Co.....	11,100				11,100
H. A. Astlett & Co.....	1,500				1,500

NOVEMBER 14.—By the *Hubert*, from Pará and Manáos:

Arnold & Zeiss.....	300,600	59,100	162,300	14,600=	536,600
General Rubber Co.....	221,800	26,800	72,200	2,800=	323,600
Meyer & Brown.....	137,100	22,100	75,200	70,400=	304,800
H. A. Astlett & Co.....	6,500		61,400		67,900
Henderson & Korn.....	6,900	8,100	12,300	8,200=	35,500
G. Amsinck & Co.....	6,700	900	6,200	2,300=	16,100

PARA RUBBER VIA EUROPE

	POUNDS.	
Rubber & Guayule Agency, Inc. (Fine).....	8,500	
James T. Johnstone (Fine).....	4,500	
Various (Cauch).....	6,700	
NOVEMBER 1.—By the <i>Carla</i> ==Colon:		
W. R. Grace & Co. (Fine).....	7,500	
W. R. Grace & Co. (Cauch).....	4,000	
W. R. Grace & Co. (Coarse).....	1,000	12,500
NOVEMBER 3.—By the <i>Nedra</i> ==Colon:		
Yglesias Lobo & Co. (Fine).....	16,500	
NOVEMBER 3.—By the <i>Adria</i> ==Colon:		
Various (Cauch).....	11,200	
NOVEMBER 11.—By the <i>Caronia</i> ==Colon:		
Raw Products Co. (Fine).....	11,200	
Various (Cauch).....	3,000	14,200
NOVEMBER 11.—By the <i>Pretoria</i> ==Hamburg:		
Ed. Maurer.....	22,500	
Rubber & Guayule Agency, Inc. (Fine).....	9,500	
Henderson & Korn (Coarse).....	13,500	45,500
NOVEMBER 15.—By the <i>Cedric</i> ==Colon:		
Arnold & Zeiss (Cauch).....	22,500	
Various (Cauch).....	4,000	26,500
NOVEMBER 17.—By the <i>Commodore</i> ==Colon:		
G. Amsinck & Co. (Fine).....	1,700	
G. Amsinck & Co. (Coarse).....	2,200	
General Export & Commission Co. (Coarse).....	1,500	
General Export & Commission Co. (Fine).....	500	5,900
NOVEMBER 18.—By the <i>Kronland</i> ==Antwerp:		
R. B. Johnson.....	22,500	

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	POUNDS.	
OCTOBER 20.—By the <i>Allemania</i> ==Colon:		
H. C. Johnson.....	2,000	3,000
Various.....	2,000	
OCTOBER 21.—By the <i>Prinz Eitel Frederick</i> ==Colon:		
Rosenthal & Sons.....	2,000	
OCTOBER 22.—By the <i>Tagus</i> ==Colon:		
G. Amsinck & Co.....	1,200	
A. M. Capen's Sons.....	1,500	
A. Held.....	200	2,900
OCTOBER 22.—By the <i>Scottish Prince</i> ==Bahia:		
Adolph Hirsch & Co.....	5,400	
OCTOBER 23.—By the <i>Advance</i> ==Colon:		
G. Amsinck & Co.....	10,000	
OCTOBER 23.—By the <i>Patricia</i> ==Hamburg:		
Various.....	11,000	
OCTOBER 24.—By the <i>Sarnia</i> ==Frontera:		
E. Steiger & Co.....	1,200	
OCTOBER 24.—By the <i>Monterey</i> ==Mexico:		
Hermann Kluge.....	1,600	
E. Steiger & Co.....	1,600	
Harburger & Stack.....	1,200	
L. Johnson & Co.....	3,000	7,400
OCTOBER 27.—By the <i>Prince Eitel Frederick</i> ==Colon:		
Kunhardt & Co.....	500	
Caballero & Blanco.....	300	800

	POUNDS.	
Adolph Hirsch & Co.....	40,000	
OCTOBER 28.—By the <i>Carl Schurz</i> ==Colon:		
J. S. Sembrada & Co.....	8,500	
OCTOBER 28.—By the <i>Panama</i> ==Colon:		
G. Amsinck & Co.....	3,100	
M. A. de Leon & Co.....	400	3,500
OCTOBER 31.—By the <i>Sibiria</i> ==Frontera:		
E. Steiger & Co.....	1,000	
NOVEMBER 1.—By the <i>Morro Castle</i> ==Mexico:		
E. Steiger & Co.....	2,200	
G. Amsinck & Co.....	300	
Harburger & Stack.....	500	3,000
NOVEMBER 3.—By the <i>Albion</i> ==Colon:		
Caballero & Blanco.....	500	
NOVEMBER 3.—By the <i>Allianca</i> ==Colon:		
G. Amsinck & Co.....	3,400	
M. A. de Leon & Co.....	3,000	6,400
NOVEMBER 5.—By the <i>Hungarian Prince</i> ==Bahia:		
Rosbach Bros. & Co.....	26,000	
NOVEMBER 5.—By the <i>Armenia</i> ==Hamburg:		
Rosbach Bros. & Co.....	1,000	
NOVEMBER 5.—By the <i>Oruba</i> ==Colon:		
Lanman & Kemp.....	1,000	
A. M. Capen's Sons.....	2,500	3,500
NOVEMBER 6.—By the <i>Prince August Wilhelm</i> ==Colon:		
Andean Trading Co.....	6,000	
Isaac Brandon & Bros.....	700	
Wessels, Kulenkampff & Co.....	500	7,200
NOVEMBER 8.—By the <i>Prinz Eitel Frederick</i> ==Bahia:		
Rosbach Bros. & Co.....	8,500	
NOVEMBER 10.—By the <i>Prinz Eitel Frederick</i> ==Colon:		
Caballero & Blanco.....	500	
NOVEMBER 10.—By the <i>Neptun</i> ==Colon:		
General Export & Commission Co.....	400	
Eggers & Heinlein.....	200	600
NOVEMBER 11.—By the <i>Emil L. Boas</i> ==Colon:		
H. Wolff & Co.....	3,000	
NOVEMBER 11.—By the <i>Lightning</i> ==Mexico:		
G. Amsinck & Co.....	800	
NOVEMBER 11.—By the <i>Prinz Eitel Frederick</i> ==Hamburg:		
Henderson & Korn.....	23,500	
NOVEMBER 11.—By the <i>Guantanamo</i> ==Tuxpan:		
Kahn Bros.....	*2,000	
NOVEMBER 13.—By the <i>Vaderland</i> ==Antwerp:		
Rubber & Guayule Agency, Inc.....	*22,500	
NOVEMBER 14.—By the <i>President Grant</i> ==Hamburg:		
Various.....	*20,000	
NOVEMBER 15.—By the <i>Mexico</i> ==Mexico:		
G. Amsinck & Co.....	1,200	
E. Steiger & Co.....	500	
Harburger & Stack.....	300	
J. A. Medina & Co.....	200	2,200
NOVEMBER 17.—By the <i>Advance</i> ==Colon:		
G. Amsinck & Co.....	2,500	
NOVEMBER 19.—By the <i>Prinz Eitel Frederick</i> ==Colon:		
Andean Trading Co.....	5,000	
Neuss-Hachen.....	700	5,700
NOVEMBER 19.—By the <i>Trent</i> ==Colon:		
Mecke & Co.....	1,000	
A. M. Capen's Sons.....	1,000	

G. Amsinck & Co.....	700	
J. S. Sembrada & Co.....	700	
American Trading Co.....	600	4,000
NOVEMBER 19.—By the <i>Carrillo</i> ==Port Limon:		
Gravenhorst & Co.....	300	

AFRICAN.

	POUNDS.	
OCTOBER 20.—By the <i>Amerika</i> ==Hamburg:		
Arnold & Zeiss.....	7,500	
Ed. Maurer.....	3,500	
Rubber & Guayule Agency, Inc.....	30,000	
Various.....	13,000	54,000
OCTOBER 21.—By the <i>Chicago</i> ==Havre:		
Arnold & Zeiss.....	150,000	
OCTOBER 23.—By the <i>Patricia</i> ==Hamburg:		
Ed. Maurer.....	13,500	
Rubber & Guayule Agency, Inc.....	5,000	18,500
OCTOBER 25.—By the <i>Baltic</i> ==Liverpool:		
Henderson & Korn.....	7,000	
OCTOBER 25.—By the <i>Kaiserin Auguste Victoria</i> ==Hamburg:		
Rubber & Guayule Agency, Inc.....	18,000	
Various.....	33,500	51,500
OCTOBER 28.—By the <i>Zeeland</i> ==Antwerp:		
James T. Johnstone.....	15,000	
Rubber & Guayule Agency, Inc.....	14,500	
Various.....	13,000	42,500
OCTOBER 30.—By the <i>Majestic</i> ==Southampton:		
Various.....	12,000	
NOVEMBER 3.—By the <i>Lapland</i> ==Antwerp:		
Various.....	20,500	
NOVEMBER 3.—By the <i>Cymric</i> ==Liverpool:		
Meyer & Brown.....	2,200	
NOVEMBER 5.—By the <i>Noordam</i> ==Amsterdam:		
Various.....	1,500	
NOVEMBER 5.—By the <i>Armenia</i> ==Hamburg:		
Ed. Maurer.....	3,000	
Eggers Bros. & Pounds.....	2,000	
Rubber & Guayule Agency, Inc.....	7,500	12,500
NOVEMBER 10.—By the <i>La Savoie</i> ==Havre:		
Meyer & Brown.....	2,500	
NOVEMBER 10.—By the <i>Celtic</i> ==Liverpool:		
Meyer & Brown.....	6,000	
Various.....	1,000	7,000
NOVEMBER 11.—By the <i>Caronia</i> ==Liverpool:		
Robinson & Co.....	15,000	
Various.....	4,500	19,500
NOVEMBER 11.—By the <i>Pretoria</i> ==Hamburg:		
Arnold & Zeiss.....	12,500	
Ed. Maurer.....	19,500	
Rubber & Guayule Agency, Inc.....	50,000	
Ed. Maurer.....	22,500	
Various.....	18,500	123,000
NOVEMBER 13.—By the <i>Vaderland</i> ==Antwerp:		
Various.....	30,000	
NOVEMBER 14.—By the <i>President Grant</i> ==Hamburg:		
Rubber & Guayule Agency, Inc.....	7,500	
NOVEMBER 15.—By the <i>Cedric</i> ==Liverpool:		
General Rubber Co.....	17,000	
Various.....	7,000	24,000
NOVEMBER 17.—By the <i>Amerika</i> ==Hamburg:		
Ed. Maurer.....	30,000	
NOVEMBER 18.—By the <i>Kroonland</i> ==Antwerp:		
Meyer & Brown.....	67,000	
Various.....	19,000	86,000

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.	
OCTOBER 10.—By the <i>London</i> Co.	
Meyer & Brown.....	4,500
Ed. Maurer.....	4,500
W. R. Grace & Co.....	*4,000 *51,000
OCTOBER 16.—By the <i>London</i> Co.	
General Rubber Co.....	*190,000
Malaysian Rubber Co.....	*78,500
Chas. T. Wilson.....	*50,000
Meyer & Brown.....	*13,500
Henderson & Korn.....	*13,500
Ed. Maurer.....	*11,200
Rubber & Guayule Agency, Inc.....	*3,500
James T. Johnstone.....	*1,500 *361,700
OCTOBER 20.—By the <i>London</i> Co.	
W. R. Grace & Co.....	*80,000
Henderson & Korn.....	*45,000
Arnold & Zeiss.....	*13,500
Rubber Trading Co.....	*2,200
Malaysian Rubber Co.....	*3,500
Robinson & Co.....	*6,000
Various.....	*3,000 *153,200
OCTOBER 20.—By the <i>America</i> Hamburg:	
Ed. Maurer.....	*8,500
OCTOBER 21.—By the <i>Chicago</i> =Havre:	
Michelin Tire Co.....	*35,000
OCTOBER 21.—By the <i>Potsdam</i> =Amsterdam:	
Rubber Trading Co.....	*4,000
Meyer & Brown.....	*1,200 *5,200
OCTOBER 22.—By the <i>Olympic</i> =Southampton:	
Arnold & Zeiss.....	*280,000
Robinson & Co.....	*50,000
Ed. Maurer.....	*11,200
W. Stiles.....	*9,000
Chas. T. Wilson.....	*8,500
Rubber Trading Co.....	*6,000 *364,700
OCTOBER 23.—By the <i>Patricia</i> =Hamburg:	
Rubber & Guayule Agency, Inc.....	*7,000
OCTOBER 24.—By the <i>Patricia</i> =Singapore:	
Henderson & Korn.....	*156,000
Ed. Maurer.....	*70,000
Ed. Boustead.....	*25,000
Malaysian Rubber Co.....	*22,500
L. Littlejohn & Co.....	*56,000
James T. Johnstone.....	*36,000
Ed. Maurer.....	*7,000
Various.....	*8,000 *380,500
OCTOBER 25.—By the <i>Kaiserin Auguste Victoria</i> —Hamburg:	
Chas. T. Wilson.....	*2,500
OCTOBER 25.—By the <i>Indraghiri</i> =Singapore:	
Henderson & Korn.....	*130,000
Ed. Maurer.....	*40,000
W. R. Grace & Co.....	*22,500
Malaysian Rubber Co.....	*12,500
Johnstone & Co.....	*4,000
Various.....	*6,000 *215,000
OCTOBER 27.—By the <i>Neve Amsterdam</i> =Amsterdam:	
Meyer & Brown.....	*5,500
OCTOBER 27.—By the <i>Neve Amsterdam</i> =Southampton:	
Chas. T. Wilson.....	*90,000
Arnold & Zeiss.....	*25,000
Meyer & Brown.....	*24,500
Henderson & Korn.....	*22,500
Ed. Maurer.....	*11,200
W. R. Grace & Co.....	*6,000
Rubber & Guayule Agency, Inc.....	*5,000
Rubber Trading Co.....	*4,000 *188,200
OCTOBER 28.—By the <i>Zeeland</i> =Antwerp:	
Meyer & Brown.....	*135,000

OCTOBER 8.—By the <i>Monarch</i> =London:	
General Rubber Co.....	*77,000
James T. Johnstone.....	*7,500
Henderson & Korn.....	*17,000
Malaysian Rubber Co.....	*11,200
Various.....	*1,000 *108,200
OCTOBER 10.—By the <i>Monarch</i> =London:	
Meyer & Brown.....	*2,000
W. Stiles.....	*5,600
Chas. T. Wilson.....	*8,500
Robinson & Co.....	*11,200
Henderson & Korn.....	*3,000
Ed. Maurer.....	*22,500
Raw Products Co.....	*3,000
Arnold & Zeiss.....	*1,600
James T. Johnstone.....	*11,000 *69,500
NOVEMBER 1.—By the <i>Casama</i> =Colombo:	
Meyer & Brown.....	*56,000
Ed. Maurer.....	*56,000
W. R. Grace & Co.....	*63,500
Various.....	*16,000 *205,500
NOVEMBER 3.—By the <i>London</i> =Amsterdam:	
Meyer & Brown.....	*246,000
Arnold & Zeiss.....	*17,000
Malaysian Rubber Co.....	*11,200
Various.....	*8,000 *282,200
NOVEMBER 3.—By the <i>Cynric</i> =Liverpool:	
General Rubber Co.....	*45,000
NOVEMBER 3.—By the <i>New York</i> =Southampton:	
Meyer & Brown.....	*10,000
Chas. T. Wilson.....	*16,000
Arnold & Zeiss.....	*67,000
Raw Products Co.....	*3,500
Ed. Maurer.....	*8,500 *105,000
NOVEMBER 5.—By the <i>Neve Amsterdam</i> =Amsterdam:	
Various.....	*25,000
NOVEMBER 5.—By the <i>Minnehaha</i> =London:	
General Rubber Co.....	*280,000
Johnstone Whitworth Co.....	*45,000
Ed. Maurer.....	*11,200
Various.....	*3,000 *339,200
NOVEMBER 5.—By the <i>London</i> =Hamburg:	
Ed. Maurer.....	*4,000
NOVEMBER 6.—By the <i>Oosterdyk</i> =Amsterdam:	
Rubber Trading Co.....	*45,000
Meyer & Brown.....	*1,000
Robert Badenhop.....	*13,500 *82,500
NOVEMBER 6.—By the <i>Oceanic</i> =Southampton:	
Henderson & Korn.....	*101,000
Robinson & Co.....	*12,500
Ed. Maurer.....	*11,200
James T. Johnstone.....	*9,000
A. W. Brunn.....	*2,200
Various.....	*11,200 *147,100
NOVEMBER 8.—By the <i>Kansas</i> =Singapore:	
Henderson & Korn.....	*110,000
L. Littlejohn & Co.....	*45,000
Ed. Maurer.....	*40,000
Malaysian Rubber Co.....	*25,000
E. Boustead.....	*14,500
W. R. Grace & Co.....	*10,000
Arnold & Zeiss.....	*3,000
James T. Johnstone.....	*15,000
Various.....	*11,200 *273,700
NOVEMBER 10.—By the <i>Kandelfels</i> =Colombo:	
Meyer & Brown.....	*33,500
H. W. Peabody & Co.....	*11,200
W. R. Grace & Co.....	*11,200
Ed. Maurer.....	*5,600
Various.....	*10,000 *71,500
NOVEMBER 10.—By the <i>Celtic</i> =Liverpool:	
General Rubber Co.....	*4,500
NOVEMBER 11.—By the <i>Pretoria</i> =Hamburg:	
Ed. Maurer.....	*2,500

Arnold & Zeiss.....	*1,100
Various.....	*7,500 *1,100
NOVEMBER 1.—By the <i>Neve Amsterdam</i> =Amsterdam:	
General Rubber Co.....	*180,000
Arnold & Zeiss.....	*157,000
Chas. T. Wilson.....	*140,000
James T. Johnstone.....	*56,000
Meyer & Brown.....	*8,500
Robinson & Co.....	*6,700
Various.....	*40,000 *588,200
NOVEMBER 1.—By the <i>Neve Amsterdam</i> =Amsterdam:	
Ed. Maurer.....	*28,000
W. Stiles.....	*13,500
Robinson & Co.....	*11,200
Meyer & Brown.....	*11,000
Various.....	*8,000 *71,700
NOVEMBER 1.—By the <i>Neve Amsterdam</i> =Amsterdam:	
Meyer & Brown.....	*113,500
Arnold & Zeiss.....	*17,000
Malaysian Rubber Co.....	*5,600
Various.....	*2,200 *138,300
NOVEMBER 13.—By the <i>Ryndam</i> =Amsterdam:	
Meyer & Brown.....	*3,500
NOVEMBER 14.—By the <i>De Rotterdam</i> =Hamburg:	
Rubber & Guayule Agency, Inc.....	*9,200
Chas. T. Wilson.....	*13,500
Various.....	*2,000 *24,700
NOVEMBER 17.—By the <i>St. Louis</i> =Southampton:	
Meyer & Brown.....	*15,000
Henderson & Korn.....	*27,500
Arnold & Zeiss.....	*52,000
Chas. T. Wilson.....	*36,000
Robinson & Co.....	*14,500
Rubber Trading Co.....	*7,000
Raw Products Co.....	*3,500
W. R. Grace & Co.....	*45,000 *200,500
NOVEMBER 17.—By the <i>Rotterdam</i> =Amsterdam:	
Rubber Trading Co.....	*2,200
NOVEMBER 18.—By the <i>Kroonland</i> =Antwerp:	
Meyer & Brown.....	*245,000
Malaysian Rubber Co.....	*11,200 *256,200
NOVEMBER 18.—By the <i>Minnetonka</i> =London:	
Meyer & Brown.....	*31,600
Ed. Maurer.....	*30,000
James T. Johnstone.....	*25,000
W. R. Grace & Co.....	*35,000
General Rubber Co.....	*282,000 *403,600

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK, OCTOBER, 1913.		
Imports	Pounds.	Value.
India-rubber.....	8,445,183	\$4,568,813
Balata.....	90,433	44,537
Guayule.....	130,635	52,254
Gutta-percha.....	270,250	18,713
Gutta-jelutong (Pontianak).....	1,870,740	81,502
Total.....	10,807,241	\$4,765,819
India-rubber.....	36,300	\$20,102
Balata.....	.....	.....
Guayule.....	.....	.....
Gutta-percha.....	.....	.....
Gutta-jelutong.....	63,659	11,539
Rubber scrap, imported.....	1,098,149	\$85,175
Rubber scrap, exported.....	295,955	41,615

BOSTON ARRIVALS.

IMPORTS IN OCTOBER, 1913.		
	Pounds.	Value.
Guayule gum.....	35,789	\$10,557
Gutta-jelutong.....	150,180	6,395
Gutta-percha.....	52,469	7,953
India rubber.....	13,550	8,821



Vol. 49 DECEMBER 1, 1913. No. 3.

TABLE OF CONTENTS.

Editorials:

The Rubber Trade's Debt to Guayule.....	109
Rubber Scrap Too High.....	109
Taking the Measure of the Last Thirty Years.....	110
Wisely Awaiting the Result of the Tariff.....	110
The Transportation Tax on the Rubber Manufacturer..	110
Why Leather Shoes?.....	111
Minor Editorials.....	111
What the Rubber Chemists Are Doing.....	112
Fifty Square Miles of Rubber Trees.....	113
(With 7 Illustrations)	
Rubber Notes from Singapore.....	116
(With 2 Illustrations)	
The Coagulation of Hevea Latex by Smoking.....	118
Rio Rubber Exposition of October, 1913.....	120
(With 1 Illustration)	
The Rubber Manufacturing Industry in Brazil.....	121
(Portrait of Dr. Manuel Lebat)	
Adulterations in the Rubber Industry.....	121
Some New Tapping Knives.....	122
(With 2 Illustrations)	
The Rubber Manufacturer's Transportation Burden.....	123
Synthetic Rubber from Two Aspects.....	124
Summer Bob-Sledding with Rubber Tires.....	124
(With 1 Illustration)	
Rubber Hose in the Machine Shop and Foundry.....	125
(With 4 Illustrations)	
More Rubber Tiling and Paving.....	127
A Few More Figures on Oversized Tires.....	127
The Rubber Trade in Boston.....	128
(With 2 Illustrations)	
The Rubber trade in Akron.....	129
(With 1 Illustration)	
The Rubber Trade in Chicago.....	130
The Rubber Trade in Rhode Island.....	131
The Rubber Trade in San Francisco.....	132
The United States Rubber Co.'s New Stock Issue.....	133
Obituary Record.....	134
The Detectorphone for Locating Machine Troubles.....	134
(With 1 Illustration)	
William Appleton Lawrence.....	135
(With Portrait)	
News of the American Rubber Trade.....	138
(With Illustrations)	
The Standard Woven Fabric Co.'s New Plant.....	139
(With 1 Illustration)	
New Rubber Goods in the Market.....	143
(With 7 Illustrations)	
Waterproof Garments for the Sportsman.....	144
(With 2 Illustration)	
New Machines and Appliances.....	145
(With 5 Illustrations)	
The Editor's Book Table.....	147
New Trade Publications.....	148
(With 1 Illustration)	
The India Rubber Trade in Great Britain.....	150
Mr. Eaton's Report on European Factories.....	151
Some Rubber Interests in Europe.....	152
Siegmund Seligmann.....	153
(With Portrait)	
German Opinion Respecting the Future of Rubber.....	153
Some Rubber Planting Notes.....	154
Rubber Notes from British Guiana.....	155
Rubber Planting in the Dutch East Indies.....	156
Recent Patents Relating to Rubber.....	157
(United States, Great Britain, France, Germany, Belgium)	
Fighting Fire on Shipboard.....	159
(With 1 Illustration)	
Review of Crude Rubber Market.....	160

Antwerp.

RUBBER STATISTICS FOR OCTOBER.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, September.....kilos	455,120	708,127	435,545	580,908	397,454
Arrivals in October—					
Congo sorts.....	355,189	209,002	355,970	175,101	199,664
Other sorts.....	559	9,596	26,841	52,709	19,505
Plantation sorts.....	236,373	105,545	32,452	47,943	46,016
Aggregating.....	1,047,241	1,032,270	850,808	856,661	662,639
Sales in October.....	409,165	463,451	272,600	257,887	197,808
Stocks, October 31.....	638,076	568,819	578,208	598,774	464,831
Arrivals since January—					
Congo sorts.....	2,461,005	2,658,416	2,706,051	2,525,799	2,858,957
Other sorts.....	111,416	126,934	369,860	314,823	738,441
Plantation sorts.....	1,742,617	1,097,623	525,979	464,526	238,940
Aggregating.....	4,315,038	3,882,973	3,601,890	3,305,148	3,836,338
Sales since January 1.....	4,188,022	3,978,692	3,611,994	3,247,884	3,967,242

RUBBER ARRIVALS FROM THE CONGO.

OCTOBER 29.—By the steamer *Anversville*:

Bunge & Co.....	(Comfina) kilos	4,500
do.....	(Belgica)	6,900
do.....	(Comp. Commercial Congolais)	15,700
do.....	(Générale Africaine)	750
do.....	(Grands Lacs)	6,400
do.....	(Intertropical)	23,300
Société Coloniale Anversoise.....	(Comminiére)	5,300
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde—S. A.).....	(Cie du Kasai)	161,400
do.....	(Crevelde)	5,700
Charles Dethier.....	(American Congo Co.)	9,950
		239,900

Plantation Rubber From the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1, to October 30, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain.....pounds	5,595,634	10,808,997
To United States.....	3,145,895	4,883,733
To Belgium.....	838,322	2,991,293
To Australia.....	212,396	401,913
To Japan.....	41,263	204,541
To Germany.....	140,424	203,516
To Straits Settlements.....	86,980	
To Italy.....	5,909	38,828
To Austria.....	55,351	30,097
To France.....	2,017	4,482
To Holland.....	2,282	992
To India.....	400	881
To Canada.....	16,065	
To Russia.....	2,288	
To Norway and Sweden.....	39	
	10,058,285	19,656,253

(Same period 1911—4,487,261 pounds; same 1910—2,223,341.)

The export figures of rubber for 1913 given in the above table include the imports re-exported, viz., 1,750,219 lbs. To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct this quantity from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

	Singapore.	Penang.	Port Swet-	
To	Oct. 3.	Aug. 31.	tenham.	Total.
Great Britain pounds	14,249,990	9,492,667	17,838,787	41,581,444
Continent.....	196,635	77,333	2,260,808	2,534,776
Japan.....	738,267			738,267
Ceylon.....	31,581	167,467	1,019,201	1,218,249
United States.....	4,464,606	202,000		4,606,606
Australia.....	70,556			70,556
Total, 1913.....	19,751,635	9,939,467	21,118,796	50,809,898
Total, 1912.....	9,998,689	5,851,230	14,917,100	30,767,019
Total, 1911.....	4,538,628	3,042,612	8,525,001	16,106,241
Total, 1910.....	2,659,962	1,437,830	5,946,053	10,043,845

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TABLE OF CONTENTS ON LAST PAGE OF READING.**1913 IN THE RUBBER TRADE—AND 1914.**

POSSIBLY some humorist may say that the only trouble with 1913 was the 13, but the trouble with 1913 as far as concerns the rubber trade—and as far as there was any trouble—cannot be diagnosed quite so simply. Taken as a whole, the rubber trade has no just ground for any specially vociferous complaint against the year just closed, but on the other hand it must be admitted that it was not a twelvemonth that called for any particular jubilation. All in all, it was rather disappointing—and from a complication of causes.

First, there was the periodical ebb that always follows the business flood. Sometimes this commercial recession is assignable to definite causes and again it seems simply to come because it is due. 1913 was a recessionary year everywhere. All the commercial centers of Europe have complained of a perceptible slowing down of the machinery of trade. In this country, in addition to world conditions we had the political upheaval that generally attends the entrance of a new administration with a variety of new policies to be tried out. This is upsetting always. So every American industry, from steel down, has been disposed to take in sail while it charted the

course ahead. And when this particular new administration rushed through a radical tariff and promised sundry innovations in the banking and currency systems, enterprise was still further convinced that it was a good time to sit tight and await events.

In addition to troubles at large the rubber trade has enjoyed a few of its own. The tire department has suffered from too much prosperity. Two years ago, when prices were at their highest, the talk, in the trade and out, was all on the prodigious profits of the tire makers. The natural result—a great rush to make tires; until the production, or at least the capacity of production, outran the capacity of consumption. Then came the inevitable scaling of prices, amounting to nearly 25 per cent.—averaging tubes and cases of all sizes—during the year; and this on top of an earlier reduction in 1912. And there were the flood in Ohio and the strike in Akron, both unforeseeable and thus impossible to guard against, and both destructive of rubber property.

As to the makers of footwear, they have not suffered so much from over-production as from under-consumption. The manufacturer of rubber boots and shoes is in one respect an unhappy mortal—he is always throwing dice with fate, and can't help himself. Given normal conditions, it can be forecast to a nicety how many pairs of leather shoes, how many pairs of stockings and how many hats any given twelvemonth will consume, but with rubbers it is purely a guess. Will it be an old-fashioned winter with snow to the window sills, or one of those new-fashioned open winters when everybody goes about dry shod? Last winter was decidedly an open one, and the retailers' stocks of goloshes did not move as they should; so all the maker of rubber footwear can do now is to use much discretion as to the size of the stock he will manufacture ahead and pray vigorously for snow.

In the mechanical line things have pursued more nearly a normal course, but with the slacking up of general industry fewer belts have been called for, less hose has been wanted and not so much packing been ordered from the factory. In druggists' sundries there would seem to be less ground for a falling off in business, but still there has not been that rhythmic pulse beat indicative of robust health. People have needed hot water bottles just as much as at any former time, but with eggs selling at 60 cents a dozen there are economic souls who forego the hot water bottle and use a heated brick.

But—

There is another side to the picture. There is the

forward look as well as the backward look. If the year 1913 as viewed by the rubber manufacturer seemed to be marked by a few clouds, the year 1914 appears altogether bright.

There have been times when crude rubber sold as low as at present, and even lower, but there has been no time in many years when there was at once low-priced rubber and every promise of the continuance of this condition. The rubber manufacturer can look forward into the coming year confident that he will secure his rubber supplies at a moderate price. This means not only that he can lay his plans along the regular lines of his operations with assurance that these plans can be carried out, but it means that he can give his attention to a great extension of his business into lines that have hitherto been impracticable for him to follow; for obviously with Pará rubber in the 70's and plantation rubber in the 50's the rubber industry is susceptible of an enormous expansion that would be impossible at the materially higher prices that have prevailed most of the time during the last ten years.

There is another most favorable feature for the manufacturer—and that is in the great progress made in the standardizing of plantation rubbers—progress already carried to such a degree that very soon it will be possible for the manufacturer to buy his rubber with the same assurance of quality as he now feels in the purchase of many of his other supplies. He will soon be free from the tedious and expensive necessity of testing every new purchase of rubber that comes to his mill.

Taking it all in all, therefore, the rubber manufacturer can look forward to the coming year not only with courage and hope but with good cheer and optimism.

Real distress, however—or at least a very real apprehension of distress—has been felt in the world of crude rubber. In Brazil the distress has been genuine and unfeigned. An American just returned from that country states—as will be noticed in his letter appearing elsewhere in this issue—that the *seringueiros* are starving. Possibly they haven't quite reached that unhappy stage, but certainly none of them are likely to be overfed. In Manáos and Pará many shippers have put up their shutters. A loud complaint, too, has come from Africa, for who wants cheap Africans with plantation first latex selling close to 50 cents? And as to the East, our Singapore correspondent writes that if there is not a mend in rubber prices very soon some 400,000 acres of the 1,400,000 now planted to rubber will cease to be cultivated and lapse back into jungle. The probability is that this unfortunate condition will not come about

but obviously the outlook from the planter's standpoint is quite different with rubber at 50 cents from the cheerful aspect when it sold at \$2 a pound.

However, the planters have no occasion for any undue worryment, for there seems nothing surer in the future of human events than the fact that the rubber manufacturing world will have to look to the plantations for its supplies. So that, while the planter's percentage of profit may be much lower than in the past, his volume of profit should increase with each succeeding year. It is certainly a safe prediction that all those planting enterprises which rest on the sound foundation of carefully selected location, honest capitalization and efficient management will prosper, while those that have been promoted simply to sell stock will go their logical way into unsung oblivion.

"THE INDIA RUBBER WORLD" FOLLOWS THE UPTOWN MARCH.

NEW YORK has enjoyed for the past ten years the distinction of being the most torn-up city in the world. What with new subways, tubes under the East River, tunnels under the North River and sundry bridges, its condition has been one of perpetual upheaval. But in all this change there has been one abiding principle—the city's center moves steadily north.

When, ninety years ago, old John Jacob Astor, the original, built the Astor House—just torn down—his contemporaries told him pleasantly that he was stark crazy to put his hotel so far uptown; but the city's center soon reached the Astor House, and left it behind fifty years ago. Everything is moving north, and THE INDIA RUBBER WORLD moves with the rest.

Three years ago it joined the northward trend and left its quarters at Broadway below Canal street, for a new home on Thirty-eighth street; but during the last three years many large rubber interests have left their former downtown locations and taken up their business abodes in the 50's, while the shopping center and hotel district have moved up to Forty-second street, if not already across it; so THE INDIA RUBBER WORLD again takes up its northward march and with this issue is established in its new quarters at 25 West Forty-fifth street.

This is in the very heart of metropolitan activities. It is close to the Grand Central Station, the subways and "L's"; within a few minutes' walk of all the leading hotels; a near neighbor to many famous clubs, and only three blocks from the stately marble pile that houses the great Public Library. It is a location for high thinking and

plain living—if one insists on it. THE INDIA RUBBER WORLD fattened perceptibly on Thirty-eighth street, taking on an additional 200 pages a year. It hopes to round out still further in its new home. Incidentally, it might be mentioned that it had greatly outgrown its old quarters and desperately needed the generous increase of floor space—which it is now so much enjoying.

THE LAST OF THE BOSTON PIONEERS.

TWENTY years ago there were in Boston eight men whose names were known from the Atlantic to the Pacific. Their activities centered chiefly about the manufacture of mechanical rubber goods and footwear. They were friends, lunching together almost daily, calling each other James and George and Henry. Of widely different temperaments, they often disagreed and threshed out their differences like the good fighters they were, but with no diminution of their basic respect and final friendliness. They were sound business men, and successful. The death of George H. Hood marks the passing of the last of them. Those of us who remain and who knew them recall their strong individuality, their many virtues, their interesting personalities. Their faults forgotten, their achievements acknowledged, they pass into history as pioneers and founders of the rubber industry.

IS RUBBER HEADED TOWARD HIGHER LEVELS?

OUR Singapore correspondent, whose letter published in November on the subject of direct shipments of rubber from Singapore to New York created not a little comment in the trade, has sent us another communication—appearing elsewhere in this issue—in which, under the title "Will 1914 See a Shortage in Rubber?" he discusses the possibility (which appears to him to be a probability) that the present low level of prices, if maintained, will cause such a contraction of rubber shipments as to produce a decided shortage. He contends that at 2s. a pound—the present price of first latex being but a few cents above that figure—comparatively few plantations are able to do more than pay expenses, and that unless an increase of price occurs in the very near future there must be a marked shrinkage in plantation operations, while the cheaper African rubbers will be driven from the market and the shipments from the Amazon be reduced to one-third of their present volume. Even allowing for an output of 55,000 tons from the Eastern plantations for 1914, he predicts, unless prices mend, that in-

stead of 140,000 tons, to meet the needs of manufacturers for the year, there will be only 100,000 or possibly 110,000 tons—or a shortage of from 30,000 to 40,000 tons.

Predictions as to future rubber supplies are always of interest when coming from those who have reliable information on which to base their forecasts, but it is quite possible that our correspondent takes too dark a view of the situation. It is a case where supply will doubtless adjust itself to demand automatically, and as soon as the output begins to drop by reason of low prices the necessities of the manufacturers will assuredly send prices up again and thus call forth an increased supply.

MEXICO FROM THE INSIDE.

DURING the past decade a great many letters have appeared in this publication from an American correspondent in Mexico who went to that country twenty years ago and engaged in the planting of agricultural products suited to that climate—rubber trees among the rest. His descriptions sent us from time to time of the development of the *Hevea* and *Castilloa* trees on his plantation have been exceedingly interesting and full of information as to the rubber possibilities of that Republic. But the latest letter from his pen—which appears in this issue—does not refer at any length to rubber developments, but rather is a very candid exposition of the Mexican situation as seen by a foreigner so long resident in Mexico as to be capable of forming sound and just opinions. His references to Washington are not altogether in a complimentary vein, but they appear well worth reproducing, as they are the opinions of an intelligent and truthful observer. And he is undoubtedly right when he states that these opinions are shared by a very large part of all the Americans and foreigners resident in Mexico.

Practically the only definite utterance regarding the Mexican situation that has come from Washington was given out some weeks ago when the administration called upon all Americans in that country to leave and come home. In reply to this our correspondent asks, "What are they going to do for a living when they get to the States? It is not easy to throw up a \$300 job or carry off in your pocket a railway, a mine, a plantation or any other possession worth holding on to—not to mention a paying commercial business."

The Mexican property held by Americans runs into the hundreds of millions. American money invested in rubber plantations and the guayule industry would

alone amount to \$50,000,000. No one doubts for a moment the lofty motives that actuate the President, or the conservative statesmanship of his methods in his treatment of the Mexican situation, but it is quite natural that the American residents in that country—harassed by the Federals and harried by the rebels—should look upon their lot as a most unhappy one.

THE CLERK CAN UNDO IT ALL

A PERSPICACIOUS reporter on the "New York Times," having investigated the retail shoe trade of the metropolis, recently discoursed on the great burden the retailer bears in the multiplicity of shoe styles which he is compelled to carry, particularly as this vast variety of leather shoes makes it compulsory for him to carry an equal variety of rubber shoes. The reporter then continues: "Returns of rubbers to retail stores on the ground of unsatisfactory wear have been almost as numerous of late as the shoe styles. In a large majority of cases they are said to be due to misfitting, which in itself is due to the discrepancy in the number of rubber styles carried when compared to the number of models the shoe stock contains."

This touches what might be called one of the strong weaknesses of the rubber shoe situation. The manufacturer may do his work most devotedly, putting into his shoes the finest Up-river Pará, the best compound discovered since rubber footwear was first made seventy years ago; he may get the most skilful workmen obtainable and pay them extravagant wages, and every department of his plant may be conducted without a flaw; but if the retailer's clerk, either from languor or indifference or because he doesn't have the right shoe in stock, tries to fit a Cuban-heel rubber over a broad, low-heeled shoe and permits the customer to go forth thus misfitted, he is not only laying up trouble for his own store, but is inviting popular objugation upon the innocent manufacturer and upon the trade generally. If he has a rubber in his store which will fit the customer's shoe he should get it, tho he have to unearth the bottom-most carton of the uttermost case; and if he has not a shoe that will fit he should say so, thereby losing the sale but retaining his self-respect and the customer's good will.

WHAT THE AUTO SHOWS HAVE COST THE TIRE MAKERS.

THE large tire companies whose displays have been a conspicuous and interesting feature of the automobile shows for the past few years will be noticeable in the exhibitions to be held in New York and Chicago and other cities during the next few weeks by their absence. To be sure there will be some exhibits of tires, but the large companies that have made the chief displays—like the United States Tire Co., the Goodrich, the Goodyear, the Firestone—have decided not to take part in this year's shows.

The reasons for this withdrawal are not stated, but there are certain reasons that are quite obvious. In the

first place, these episodes are undoubtedly very disturbing to the regular and orderly routine of the companies' work; but a more substantial reason for discontinuing participation in these events lies in the very great expense that they entail. The mere cost of space is but a trifle, probably not exceeding for any one company \$300 or \$400, nor does the display itself—the preparation, arrangement and removal of exhibits—involve any considerable outlay; but when one surveys the usual concomitants it becomes evident that the expenditure must reach a very formidable figure. For instance, there is the handsome printed matter which has always been handed out with lavish generosity, a large part of it going to youngsters and other catalog collectors who by no possibility could ever be classed among purchasers of automobiles or users of tires. In addition there is the large volume of advertising usually placed in the local city press calling attention to the display at the show. And even exceeding these items is the expense of the entertainment which is an inevitable part of an occasion where good fellows get together and everyone wants to show his friendliness to everybody else—and especially to a potential buyer.

It is safe to say that a number of companies have expended over \$30,000 each on a single exhibition. It is stated on good authority that the last New York show involved an outlay among all the exhibitors of \$1,000,000. It would be a conservative estimate to place one-fifth of this, or \$200,000, among the tire men. To be sure, this is not a very large figure, compared with the volume of business transacted by the big tire companies, but it is a large figure unless it is justified by the returns—and evidently the tire people have decided that it is not.

THE RUBBER TARIFFS OF OTHER COUNTRIES.

ONE of the most legitimate as well as most effective methods by which the American manufacturer can make reprisals on foreign manufacturers who may seek to invade his market is by a counter invasion of their markets. To be sure, the great reduction in rubber duties in the bill passed early in October has not yet resulted in any conspicuous increase in importations, but foreign manufacturers will certainly be disposed, sooner or later, to try their fortune in the American market, and the home manufacturer should be prepared for this event.

In order that he may be well informed as to what barriers he will have to hurdle to get into foreign fields THE INDIA RUBBER WORLD has prepared, and publishes in this issue, a detailed table giving the rubber tariffs of all of the eighteen countries which in the fiscal year of 1912 imported American rubber goods to the value of \$100,000 and over. Some of these tariffs are high and some are low; some are general, applying to all countries alike, and some are preferential, giving the United States certain advantages—but the American manufacturer who at any time feels disposed to retaliate for any invasion of his territory will be able to tell by this table just what tariff obstacles lie in his way.

The Rubber Situation in Brazil.

The following account of conditions in the Amazon country was written by an American just returned from a tour of inspection in the Madeira-Mamoré district.

DURING the past year the rubber market of Brazil, Bolivia and Peru has shown a marked decrease in prices, which has caused great consternation among the rubber exporters of these countries.

In December, 1912, Pará rubber sold for \$1.12 per pound, while Caucho sold for 82 cents per pound. During 1913 prices have dropped and continued to go down until October of that year, when Fine Pará sold for 73 cents per pound and Caucho for considerably less. This is the lowest rubber market since 1908.

Practically all the business of Northern Brazil is governed

due to the fact that little or no rubber is being shipped by exporters throughout this entire belt.

Suarez, Hermanos & Co., the rubber barons of Bolivia, as well as Ahlers & Co., and Asensi & Co., of the Madeira district, are holding back their shipments, as it is stated that they cannot accept such prices as are being offered at this time. It may also be stated that the outlook for the immediate future is not very promising.

The writer talked with several rubber men whose lands lie between Porto Velho and Manaus, and they are all more or less pessimistic. He also talked with Senhor Hoya, a large exporter on the Rio Javary, Peru, and he stated that there is plenty of rubber to be had in his district, but that it will not be put on the market while present conditions exist.

It is true that some rubber is being shipped to New York and Europe, but in small quantities and only on special contract. The expense incurred by these rubber exporters in tapping their trees, collecting and smoking the rubber, as well as the cost of handling and freight charges, which are exorbitant, in getting the rubber to the coast for foreign shipment, to say nothing of the export duties, make it practically an impossibility for them to sell in a low market.

Take the case of Suarez, Hermanos & Co.: As already stated their rubber lands are located in Bolivia. When the rubber is collected and prepared for export same has to be brought down from the interior to Riberalta in *batelões* or big rubber boats; thence to Guajara Merim, Brazil, by larger boats. From the latter place it is conveyed to Porto Velho by rail, where it is transshipped to Manaus and Pará by small river steamers. Moreover, the company is forced to pay an export duty in Bolivia, as well as an import and export duty in Brazil.

Few rubber manufacturers know or realize to what extent the crude product has to be handled before it is loaded on the ocean-going steamers.

The rubber lands of Asensi & Co. are located at Calama on the Rio Madeira. In order that this company may get its rubber to the coast for shipment, it is necessary for the *seringueiros* to carry it on their heads from the interior to a large warehouse located on the river's bank, where it remains until one of the small freight steamers plying on this river calls for freight. These same methods of transporting the rubber are used by practically all of the exporters in Brazil.

The various rubber exporters have different scales of wages. The *seringueiros* employed by the Guapore and Julio Mueller Rubber Cos. receive from 3\$000 (0.97) to 7\$000 (2.24) per day, while Suarez, Hermanos & Co., as well as many other rubber companies, pay their rubber collectors on a percentage basis, so much per hundred kilos. The latter can earn on an average of \$500 to \$750 per season, but in most cases it is less. In any case, the wages are low, when the life these men live and the hardships and dangers endured are taken into consideration. In many cases the *seringueiro* is always indebted to his employer, who provides him with such food and clothing as he may require for himself and family.

The *seringueiro* enters into the wild rubber country when the tapping season begins, about October or November, and here he remains until the season is over, approximately seven months later. During this time he, with a few companions, is isolated from the outside world.

In June, 1913, Mr. Akers, together with a rubber commission, composed mostly of Englishmen with rubber interest



SMOKING LATEX IN THE AMAZON COUNTRY

by the rubber market, and as there is such a low market at the present time business is more or less at a standstill. Shortly after the final drop in rubber prices, many of the large business houses were closed, but reopened later, although trading was not very brisk. Many of the business men state that they have no recollection of a time when money was so scarce. This low market has also affected the government in these parts, as the main source of revenue is derived from rubber. It is stated that in some cases government employes have not received their salaries for ten months.

The Madeira-Mamoré Railway Co., which operates through the Madeira rubber district, has, since active operation began in July, 1912, been running three trains per week, but beginning November 1 only one train was to be run. This is

in Ceylon and the East, made a trip to the wild rubber lands of the Madeira with the view of ascertaining whether or not more up-to-date methods could be used for the handling of the crude product. Another series of tests was made in September of this year, but it was stated, after these were completed, that such methods as are used in the East could not be adopted in Brazil.

It is impossible to say just how long the slump in the rubber market will continue, but unless a change in conditions takes place soon many of these rubber gatherers in Northern Brazil, Bolivia and Peru must certainly starve.

BULLETIN OF THE MUSEU GOELDI, PARÁ.

THE Museu Goeldi of Pará, which, under the administration of Dr. Huber and his assistants, has become famous the world over, has recently issued its report or "Boletim," covering the year 1910. It is a comprehensive volume of 340 pages, divided into two parts, the early part dealing with the administrative features of the institution, while the rest—constituting about 300 pages—give the results of many of the scientific investigations made by the museum.

The administrative officials for the year 1910 included: Honorary director, Professor Dr. Emilio A. Goeldi, Berne, Switzerland; acting director and chief of Botanical Section, Dr. Jacques Huber; chief of Zoological Section, Dr. Emilia Snethlage; assistant for Zoology, in charge of Entomology, Sr. Adolpho

of a scientific assistant. Nevertheless, various notable improvements were made, particularly in connection with the opening of new sections to replace the older portions which had been



WATERFALLS NEAR OBIDOS, STATE OF PARÁ.

abandoned on account of their sandy and infected nature. The older parts of the garden were devoted to the extension of the rubber plantation. Reference is made to the important collections of orchids and other plants contributed by Commander Simão da Costa and by Sr. Adolpho Ducke.

At the Experimental Station the tapping was continued of the two groups of rubber trees referred to in the previous annual report—with encouraging results. One group of these trees, from 10 to 13 years old, tapped during the months October to May, with a knife invented by the director, gave an average yield in dry rubber of about 13 grams (nearly ½ ounce) per tree per day.

The Amazonian Herbarium was supplemented by 772 varieties, while the General Herbarium received a contribution of 50 plants gathered in the State of Ceará by Dr. Snethlage.

LIBRARY.

Owing to the efforts of Dr. Rodolpho R. Schuller, acting librarian, the elements have been partly collected for an "Amazonian Library," which will be of material assistance to the museum.

METEOROLOGICAL SERVICE.

This service has been conducted at the request of the Federal



MUSEU GOELDI ADMINISTRATION BUILDING.

Ducke. This group of scientists is supplemented by five technical assistants and by an administrative staff of fourteen persons in various capacities.

Seven scientific journeys were made by members of the technical staff with important results as to geographical knowledge. During the year under report additional land was acquired for the purposes of the Museum and its annexes, while further recommendations are made in the same directions.

ZOOLOGICAL GARDEN.

Several valuable specimens were added during the year, the total number of animals being increased from 680 in January to 720 in December. This number included 234 different species, 220 of which belonged to Northern Brazil (Pará, Amazonas, Maranhão, Ceará).

AQUARIUM.

The aquarium was finished during the year 1910, but owing to the glass sides not proving sufficiently strong to resist the pressure of the water they had to be replaced by others stronger in character.

BOTANIC GARDEN.

The report states that while the aspect of the garden reflects great credit on those engaged in its conservation the want is felt



WATERFALLS NEAR OBIDOS, STATE OF PARÁ.

and State governments in connection with the National Observatory of Rio de Janeiro. A series of meteorological tables for the year 1910 and two previous years forms part of the report.

DONATIONS AND VISITORS.

During the year 1910 contributions were received from 61 donors. The number of visitors averaged about 13,000 a month during the first half of the year and about 14,000 during the second half, the total for the year being 164,686 visitors.

SCIENTIFIC PART.

The scientific part of the report includes special contributions from the principal members of the staff and occupies the larger part of the volume. It is to a great extent geographical and thus of permanent interest. "From the Xingú to the Tapajoz" records two journeys of Dr. Emilia Snethlage made between the years 1906 and 1908 by that learned and intrepid woman for the purpose of making her way from the former to the latter river through the affluent rivers Irim and Jamauchim. The story of her travels



WATERFALLS NEAR OBIDOS, STATE OF PARÁ.

is graphically told in some forty pages and supplemented by 15 photographic illustrations as well as a map. Next in order is a "Comparative Vocabulary" of the Chipaya and Curuahe languages, showing the equivalents of several hundred Portuguese words; compiled by Dr. Snethlage after her return home.

In a hundred-page treatise on "Scientific Explorations in the State of Pará" Sr. Adolpho Ducke deals with "The Municipality of Faro" and "The Municipality of Obidos." This detailed account of the two districts named embraces their principal topographical and scenic features, illustrated by a dozen local views.

Dr. Huber then follows with eighty pages of "New Contributions to the Knowledge of *Hevea*," under the following heads: I. The Geographical Distribution of *Hevea*; II. Some *Hevea* Varieties of the River Iça, Putumayo; III. Distribution of Varieties of *Hevea* in the State of Pará; IV. Variability in

Character of *Hevea* and Possibilities of a Methodical Selection. Dr. Huber's well known mastery of botanical science is shown in every page of this monograph as well as in the final paper in the work, also from his pen "On a Collection of Plants from the Region of Cupaty (River Japurá-Caquetá)."

An appropriate conclusion to the volume is a colored map showing the geographical distribution of the principal rubber trees in the State of Pará. This map is due to the joint labors of Sr. José Piçanço Diniz and Dr. Jacques Huber.

In a comprehensive summary of the works published in 1909-10 within the scope of the museum's action, 35 pages are devoted to a review of current literature under the heads of: Traveling, Geography and Meteorology, Anthropology, Zoology and Botany.

Nearly 30 views of high artistic character serve to illustrate the stories of their travels contributed by two of the principal officials. The whole volume is highly creditable to the official staff of the museum, as showing what it has done to carry out its objects under the leadership of its talented director, Dr. Jacques Huber, whose name is so widely known in connection with rubber.

The publication of the report for 1910 has been delayed through the absence of Dr. Huber, and that for 1911 and 1912 is now on the press.

COMPARISON OF BRAZILIAN, PARÁ AND PLANTATION RUBBER.

At the annual meeting held recently at Edinburgh of the Tebrau Rubber Estates, the chairman, Mr. P. M. Matthew, remarked that Plantation Pará stood in a class by itself and required different treatment in manufacturing from any sort of wild rubber. This difference was a substantial one, which up to the present time the ablest rubber chemists had been unable to satisfactorily explain. While it was not merely a question of curing, the superiority of fine Pará was probably due to the particular curing process to which it had been subjected. Unless this result could be obtained by means adapted to Eastern conditions, manufacturers would be unable to dispense with fine Pará.

Smoking or treatment with antiseptic vapor during the process of drying was not curing in the proper sense of the word, nor did it impart to rubber the characteristics of fine Pará. Such rubber did not give better results in manufacture than properly prepared crêpe.

THE RUBBER GROWERS' ASSOCIATION'S COMMITTEES.

The general situation of rubber has been under investigation by three sub-committees of the Rubber Growers' Association, London. While the first of these took up the question of the advisability of combination or restriction, and the second dealt with the cause of the present fall, the third considered the questions of standardization and the publication of working results. As a result of the deliberation it was decided that combination in regard to selling might be considered, if 50 per cent. of the producing companies would come into line.

As to forward contracts, they were not condemned when their time of delivery is not too protracted; the sub-committee not considering such transactions as likely to play into the hands of the "bears."

With regard to the recent slump in plantation rubber, the sub-committee expressed the opinion that it was due to the planting interest and not to Mincing Lane. Manufacturers would not object to rubber being permanently quoted at about 3s. per pound.

The sub-committee on standardization leaves that question to the special standardization committee. While the publication of outputs and other statistics was in itself undesirable, the practice has now become so general that a change might be difficult to introduce.

RUBBER SKATIS SIX FEET LONG.

German army authorities have been experimenting with a device by which to walk on water, or rather to skate on water, because the motion resembles that of skating rather than walk-



A GERMAN SOLDIER EQUIPPED WITH RUBBER WATER SKATES.

ing. The device, in fact, is called a water skate. It is about 6 feet long, made of rubber, and when inflated looks not unlike a mammoth cigar. It is fastened on the foot like a snow shoe. It has been sufficiently perfected so that the walker has no difficulty in preserving his equilibrium. In fact soldiers while using these water skates have carried heavy loads on their backs and found no difficulty in firing with almost as much accuracy as when standing on land. They are useful, too, in leading horses across streams. A few of them can be fastened together and converted into a raft, and a number of them put side by side across a stream serve as a foundation for a pontoon bridge. These German water skates promise to be very useful.

A GLANCE AT EXPORT STATISTICS OF RUBBER GOODS.

ALL statistical returns derive their value from two sources: completeness of detail and the facility of general survey. Year by year, the annual records show progress under detailed heads, but a glance at the figures of a series of years may prove instructive as to export trade in rubber goods.

From about 3 million dollars in the fiscal year ending June 30, 1901, the figure rose to about 11 million for 1911-12 (the latest year for which details are available), while the estimate for the fiscal year 1912-13 shows about 14 million dollars.

TABLE A—SHOWING AMERICAN EXPORTS OF RUBBER MANUFACTURES FOR 1901-12.

Fiscal year.	Value of rubber goods exported.
1900-01.....	\$3,017,268
1901-02.....	3,462,402
1902-03.....	4,176,351
1903-04.....	6,214,910
1904-05.....	4,789,817
1905-06.....	5,692,385
1906-07.....	6,214,910
1907-08.....	6,705,105
1908-09.....	6,615,074
1909-10.....	9,060,895
1910-11.....	10,947,248
1911-12.....	11,167,289
1912-13.....	14,324,894

By table A it will be seen that the twelve fiscal years 1901 to 1912 are divisible into three periods:—1901 to 1903, averaging 3½ million; 1904 to 1909, averaging 6 million; and 1910 to 1912,

averaging 10½ million. Thus the last three years showed on an average 3 times the yearly amount of the first three.

While these total figures are instructive, a dissection into the principal articles illustrates detailed progress. In applying this test to the period since 1909, table B shows progress all along the line.

TABLE B—SHOWING EXPORTS OF AMERICAN RUBBER MANUFACTURES, CLASSIFIED, FOR 1908-1912.

	Belting and packing.	Boots and shoes.	Tires.	Other goods.	Total.
1908-09...	\$1,498,445	\$1,292,673	.....	\$3,823,956	\$6,615,074
1909-10...	1,960,825	1,984,739	.....	5,115,331	9,060,895
1910-11...	2,163,416	2,219,430	2,677,577	3,886,825	10,947,248
1911-12...	2,315,484	1,502,890	3,204,642	4,144,273	11,167,289

Owing to the statistics of tire exports having been published for the first time in 1911, no comparative figures are available for the earlier years as to tires, which are included for those periods with "Other goods." The separate returns for the fiscal years 1911 and 1912 are shown for tires.

Comparing the percentages of increase shown for the fiscal year 1911-12 as against 1908-09, the gain was:—belting and packing about 60 per cent.; boots and shoes about 16 per cent.; all other goods about 90 per cent.; while the total average was about 70 per cent. These figures illustrate a satisfactory expansion of American rubber goods export trade in its principal items. It is to be regretted that the Washington reports do not furnish a closer analysis of the articles comprised under "all other goods," but this category includes a large number of items.

DISTRIBUTION OF ARTICLES AMONG COUNTRIES.

As will be seen on reference to the detailed statistics of the fiscal year 1912 published in THE INDIA RUBBER WORLD March, 1913, page 317, the total of \$11,167,289 was distributed among 82 different countries, situated in the six grand divisions. This table is there shown in full detail for the respective countries and principal articles, but a summary will be found in annexed table C.

TABLE C—SHOWING GENERAL DISTRIBUTION OF EXPORTS OF AMERICAN RUBBER MANUFACTURES IN 1911-12.

	Belting and packing.	Boots and shoes.	Tires.	Other goods.	Total.
Europe	325,073	955,636	1,744,056	2,131,370	5,156,135
North Amer..	1,145,482	93,602	1,081,843	1,348,442	3,669,369
South Amer..	187,643	81,540	96,438	235,013	600,634
Asia	106,966	77,717	40,837	100,087	325,607
Oceania.....	253,936	273,452	226,881	296,993	1,051,262
Africa	296,384	20,943	14,587	32,368	364,282
	2,315,484	1,502,890	3,204,642	4,144,273	11,167,289

Thus the preponderance of Europe and North America in furnishing a market for about 80 per cent. of the United States export trade is demonstrated. In fact out of the total of 11 million, no less than 10 million belong to the above-named divisions and Oceania, including 46 countries.

But these 10 million dollars' worth of exports practically went to 18 countries, each taking more than \$100,000 worth.

Thus for the 64 other countries there only remained a total of a million dollars.

FOREIGN TRADE OPPORTUNITIES.

A report from an American consul states that a merchant located in Europe desires to establish a connection with an American firm manufacturing rubber thread used for weaving into elastic tape, bands, etc. If the right connections can be formed, f. o. b. New York payments will be made. Negotiations are desired with a view to permanent business. Correspondence may be in English. Report No. 12,120.

An American consular office in the Levant reports that a local business firm desires information and catalogs, with price lists, of all kinds of stump pullers used in uprooting small and large trees, for the purpose of turning forests into land for cultivation. Report No. 12,147.

The Rubber Tariffs of Foreign Countries.

As shown in the article immediately preceding, entitled "A Glance at Export Statistics of Rubber Goods," the total United States exports of rubber goods in 1909 amounted in value to about 6½ million dollars. This amount had risen by 1912 to about 11 million dollars.

It is a remarkable fact that while this volume of trade was distributed among 82 nations, nine-tenths of the amount was con-

centrated among the 18 nations shown in table A, which between them took more than 10 million dollars' worth of goods. Great Britain leads in the value of purchases, taking about one-third of the total, or, in conjunction with Canada, more than half of the entire sum. Mexico follows with about 7 per cent. of the whole, while the 550,000 dollar mark is keenly contested by France and Germany. The other items in the table show the amounts taken by other countries exceeding \$100,000 for the fiscal year 1912.

operation of each nation's fiscal regulations is of a special nature. It is not merely the application of certain duties at certain rates. Commercial agreements have in various cases essentially modified the tariff provisions. Many paragraphs have been practically modified by various decisions and the doctrine of precedent is becoming more and more the unwritten law of the foreign custom houses. In this connection, the rules for the deduction of tare and for the levying of duty on gross weight require careful study. The introduction of the dual system of tariffs calls for close investigation of its effects. Any American manufacturer who contemplates operating extensively in foreign markets should be in a position to verify the calculation of the landed and delivered cost of his goods at any given point. This does not imply that he will have to sell at a foreign price, but he should know what he has to compete with in order to meet the situation with success.

The succeeding extracts from the tariffs of most of the 18 largest customers of the United States are intended to show the nature of the competition to which American makers are subjected under existing tariff conditions. The equivalents of the foreign denominations are shown in American currency and measurements. In transacting any initial business at foreign prices it is, however, advisable to make a small trial shipment, in order to give the matter a test and to make sure the anticipated duties will be applied to the bulk of the merchandise.

The tariffs of the various countries on rubber goods are as a rule scattered through the various sections, but have been as far as possible grouped into the broad divisions of goods as shown in the tables.

TABLE A.—SHOWING PRINCIPAL AMERICAN EXPORTS OF MANUFACTURED RUBBER GOODS, CLASSIFIED, FOR THE FISCAL YEAR 1911-12, AND THE COUNTRIES TO WHICH THEY WERE EXPORTED.

Exported to	ANALYSIS OF ARTICLES—FISCAL YEAR 1912.					Total Value.
	Belting, Packing and Hose. Value.	Boots and Shoes. Value.	Auto Tires. Value.	Other Tires. Value.	Other Goods. Value.	
United Kingdom	\$210,547	\$348,863	\$1,177,746	\$134,153	\$1,340,853	\$3,212,162
Canada	441,222	30,752	696,433	21,371	981,250	2,171,028
Mexico	378,391	4,939	148,480	37,367	133,513	702,690
France	27,448	38,779	316,629	13,947	159,408	556,211
Germany	40,233	102,220	1,160	800	397,256	541,669
Australia and Tasmania.....	127,706	223,394	24,081	2,574	124,945	502,700
Philippines	93,545	6,734	73,763	103,488	125,782	403,312
Cuba	156,819	7,322	21,714	80,586	129,762	396,203
British South Africa.....	201,229	19,905	7,049	5,773	29,163	263,119
Japan	74,721	31,350	13,531	9,703	80,426	209,731
Belgium	7,733	57,016	51,620	5,468	78,576	200,413
Brazil	40,777	41,036	24,952	11,273	81,201	199,239
Panama	103,209	11,227	4,073	7,137	28,104	153,750
Turkey in Europe.....	.....	146,602	.....	.....	18	146,620
Argentina	38,751	16,346	10,196	5,935	73,586	144,814
New Zealand	31,464	39,143	11,847	9,921	45,355	137,730
Chile	57,315	7,056	354	23,682	25,833	114,240
Italy	2,237	50,325	2,387	13,425	43,917	112,291
	\$2,033,347	\$1,183,009	\$2,586,015	\$486,603	\$3,878,948	\$10,167,922

centrated among the 18 nations shown in table A, which between them took more than 10 million dollars' worth of goods. Great Britain leads in the value of purchases, taking about one-third of the total, or, in conjunction with Canada, more than half of the entire sum. Mexico follows with about 7 per cent. of the whole, while the 550,000 dollar mark is keenly contested by France and Germany. The other items in the table show the amounts taken by other countries exceeding \$100,000 for the fiscal year 1912.

Table B shows another dissection of the list, but by goods instead of countries. In making this division, the five principal classes of manufactures have been taken into account: belting, hose and packing; boots and shoes; tires for automobiles; all other tires; and other goods. In the subsequent discussion of the principal tariffs of the world, a like plan has been observed.

A dissection of the total purchases by the 18 countries shows the following result:

TABLE B.—Classification of Principal Exports Into Groups of Articles.

Belting, hose and packing.....	\$2,033,347
Boots and shoes	1,183,009
Tires for automobiles	2,586,015
All other tires	486,603
Other goods	3,878,948
Total	\$10,167,922

Tires represent a total of 30 per cent., and mechanical rubber goods 20 per cent.; these two staples forming together one-half of the total.

In any consideration of the rubber tariffs of the world, the

THE UNITED KINGDOM AND CANADA.

Articles manufactured of rubber, together with nearly all other manufactured articles, are admitted into the United Kingdom free of duty. The Canadian duties levied on manufactured rubber goods are given below:

CANADA.

(The rates under the third column marked "General" are those applicable to imports from the United States.)

CRUDE RUBBER ETC.

Tariff No.		British Preference.	Inter-mediate.	General.
616	Crude rubber and gutta percha, unmanufactured, powdered rubber and rubber waste; recovered rubber and rubber substitute	Free	Free	Free
616	Hard rubber in sheets, but not otherwise manufactured.....	Free	Free	Free
684	Rubber thread, not covered....	Free	Free	Free

BELTING, HOSE AND PACKING.

610	Belting, not of leather.....	20%	25%	27½%
683	Fillets of cotton and rubber, not exceeding 7 inches wide, when imported by manufacturers for their exclusive use	Free	Free	Free
619	Rubber or gutta percha hose and cotton or linen hose lined with rubber.....	22½%	30%	35%
619	Rubber packing.....	22½%	30%	35%

BOOTS AND SHOES.

617	India rubber boots and shoes..	15%	22½%	25%
569	Stockinette for manufacture of boots and shoes, when imported by manufacturers....	10%	12½%	15%

TIRES FOR VEHICLES.

592	Tires of rubber for vehicles of all kinds, fitted or not.....	22½%	30%	35%
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OTHER GOODS.

742	Hard rubber, unfinished, in tubes, imported for use by manufacturers of fountain pens	5%	7½%	10%
619	India rubber clothing and clothing made waterproof with india rubber.....	22½%	30%	35%
562	Oiled silk and oiled cloth and tape or other textile, india rubbered, flocked or coated, not otherwise provided for...	20%	27½%	30%
628	Braces or suspenders or finished parts thereof.....	22½%	30%	35%
528	Webbing, non-elastic, imported for use by manufacturers of suspenders	12%	17%	20%
620	Webbing, elastic, over one inch wide	12%	17%	20%
646	Belts of all kinds (except silk)..	22½%	30%	35%
575	Elastic band, flat and garter	25%	32%	35%
619	Rubber mats or matting	22%	30%	35%
407	Wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....	20%	27½%	30%
660	Clothes wringers for domestic use and parts	22%	30%	35%

Tariff No.	British Preference.	Inter-mediate.	General.
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OTHER GOODS (Continued)

652	Combs for dress or toilet (including manic combs)...	22½%	32½%	35%
653	Brushes of all kinds	17%	25%	27½%
688	Artificial limbs and parts, artificial teeth not mounted.....	Free	Free	Free
618	Rubber cement and all manufactures of india rubber and gutta percha not otherwise provided for	15%	25%	27½%

In the fiscal year 1912 United States exports of rubber goods to Canada included Belting, hose and packing, \$441,222; boots and shoes, \$30,752; tires for automobiles, \$696,433; all other tires, \$21,371; other goods, \$981,250; total, \$2,171,028.

MEXICO.

Figures on basis of ad valorem.

Peso, 49.8 cents; Kilo, 2.2 lbs.; "Kilo legal," 2.2 lbs., including interior packing; Centimeter, 0.39 inch.

BELTING, HOSE AND PACKING.

Tariff No.		Pesos.
654	Rubber belts for machinery, whether imported with corresponding machinery or not.....	Kilo gross 0.11
661	Rubber hose, even tho combined with cloth.....	Kilo legal 0.12
677	Packing of all kinds and materials for machinery	Kilo legal 0.04

BOOTS AND SHOES.

687	Rubber footwear, even containing cloth	Kilo legal 1.00
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TIRES FOR VEHICLES.

634b	India rubber tires for vehicles, even with parts of leather.....	Kilo net 0.66
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OTHER GOODS.

207	Cable, without armor, of common metals covered with any material, and cable uncovered, cylindrical or flat	Kilo gross 0.06
208	Cables provided with cores and covered with any insulating substance	Free
366	Elastics of cotton and rubber exceeding 4 centimeters in width....	Kilo legal 0.66
367	Elastics of cotton and rubber, not exceeding 4 centimeters in width..	Kilo legal 1.00
510	Elastics of rubber and pure silk mixed with cotton linen or wool, exceeding 4 centimeters in width..	Kilo legal 1.50
511	Same, not exceeding 4 centimeters in width	Kilo legal 3.50
409	Garters and suspenders of linen or hemp of all kinds, with or without fittings	Kilo legal 1.50
453	Garters and braces of wool of all kinds, with or without fittings....	Kilo legal 2.00
684	Rubber erasers	Kilo legal 0.50
688	Rubber in sheets, combined with cloth	Kilo legal 0.10
689	Caoutchouc prepared for dentists...	Kilo legal 3.00
675	Artificial teeth of all substances....	Kilo legal 4.00
652	Articles, not specially mentioned, of gutta percha, india rubber, india rubber cloth, waxed or varnished with siccativ oil.....	Kilo legal 0.45

In the fiscal year 1912 United States exports of rubber goods to Mexico included: Belting hose and packing, \$378,391; boots and shoes, \$4,939; tires for automobiles, \$148,480; all other tires, \$37,367; other goods, \$133,513; total, \$702,690.

FRANCE.

For the purpose of this tariff, 100 Kilograms = 220.462 Pounds; 100 Kilometers = 62.137 Miles; 100 Centimeters = 39.3701 Inches; 100 Square Meters = 1.196 Square Yards.

The "General" tariff is applicable to imports from the United States except three items in No. 620 marked *.)

Tariff No.		General Tariff. Francs.	Minimum Tariff. Francs.
119	India rubber, balata and gutta percha, raw or melted in lumps	Free	Free
620	Sheets of india rubber, pure, not vulcanized	100 K. n. 30.00	20.00*
620	Threads of vulcanized india rubber, 3 millimeters or less in thickness	100 K. n. 9.00	Free*
	Other	100 K. n. 30.00	20.00*

BELTING, HOSE AND PACKING

620	Belting, piping, valves and other articles of crude rubber or gutta percha, pure or mixed, soft or hard, combined or not with tissues or other material.....	100 K. n. 105.00	70.00
529	Sheets and fillets for cards, with and without gutta percha	100 K. n. 260.00	165.00

BOOTS AND SHOES

620	Boots and shoes of rubbered tissues lined with felt, wool or any cloth combined with wool	100 K. n. 150.00	100.00
	Of rubbered tissues lined with cloth of cotton, hemp or flax	100 K. n. 120.00	80.00
	With soles wholly of india rubber	per pair 0.75	0.50

TIRES FOR VEHICLES

620	Treads, air tubes or pneumatic tires	100 K. n. 150.00	100.00
620	Blocks, solid tires for carriage wheels in the rough state, worked or finished	100 K. n. 100.00	80.00
620	Treads, air tubes or pneumatic tires, covers, etc., for cycle wheels, in the rough state, worked or finished	Durable as parts of cycles	

OTHER GOODS

620	Elastic tissues with threads of imitation gold or silver or of any textile other than silk or artificial silk.....	100 K. n. 300.00	200.00
	With threads of silk or artificial silk, combined or not with other material. Less than 20 m. m. and more than 45 m. m. in width....	100 K. n. 300.00	200.00
	Other widths	100 K. n. 600.00	400.00

Tariff No.

OTHER GOODS—Continued.

620	Rubbered tissues in the piece, weighing per square meter 800 grams or more.....	100 K. n. 105.00	70.00
	More than 400 and less than 800 grams.....	100 K. n. 200.00	135.00
	400 grams or less, containing in warp and woof in a square of 5 m. m. side—less than 44 threads.....	100 K. n. 300.00	200.00
	44 threads or more.....	100 K. n. 600.00	400.00
620	Articles made of rubbered tissues weighing 400 grams or less per square meter and containing in the woof and warp in a square of 5 m. m. side 44 threads or more	100 K. n. 675.00	450.00
620	Dress shields of rubber sheet without cloth.....	100 K. n. 150.00	100.00
	Of rubbered tissue or of rubber sheet combined with any tissue other than silk and artificial silk.....	100 K. n. 380.00	250.00
	Of rubber sheet combined with tissue of silk, natural, artificial, pure or mixed....	100 K. n. 510.00	340.00
620	Braces, garters, belts, etc., of textile threads other than natural and artificial silk., Natural or artificial silk combined or not with any other material	100 K. n. 450.00	300.00
	Others	100 K. n. 375.00	250.00
620	Special rubbered tissues for cards without teeth, without felt	100 K. n. 105.00	70.00
	Felt lined	100 K. n. 120.00	78.00
535	Wires and cables insulated for electricity, covered with silk in combination with rubber or gutta percha, without a protecting covering of metal.....	100 K. n. 150.00	100.00
	Rubber or gutta percha alone or in combination with materials other than silk, without a protecting covering of metal.....	100 K. n. 100.00	70.00
	Other cable with a metallic core of 5 10 m. m. in diameter or more.....	100 K. n. 60.00	40.00
	Less than 5 10 m. m. in diameter	100 K. n. 90.00	60.00
566d	Mechanical stoppers with or without rubber ring.....	100 K. n. 40.00	25.00
636	Fountain or stylographic pens	each 0.75	0.50
477b	Imitation leather with balata, caoutchouc or similar base	100 K. n. 105.00	70.00

In the fiscal year 1912 United States exports of rubber goods to France included: Belting, hose and packing, \$27,448; boots and shoes, \$38,779; tires for automobiles, \$316,629; all other tires, \$13,947; other goods, \$159,408; total, \$556,211.

GERMANY.

Mark (m.), 23.8 cents; Pfennig (pf.), .24 cent; Kilo, 2.2 lbs.; 100 kilos,

The General Tariff Rates apply to imports from the United States except in a few instances where a lower rate is given under the "Conventional" Tariff, as will be noticed in the second column given below:

Tariff No.	CRUDE RUBBER, CEMENTS, ETC	Conven- General Tariff.	Tariff. m. pf.	Tariff. m. pf.
98	India rubber, gutta percha and balata gum, raw or refined, artificial caoutchouc made with oil, and all substitutes for caoutchouc	Free		
345	Caoutchouc and gutta percha cement	100 K.	3.00	
352	Rubber oil	Free		
570	India rubber, dissolved, with or without admixture of resin....	100 K.	3.00	
571	Soft rubber paste.....	100 K.	5.00	
582	Hardened india rubber paste, not vulcanized	100 K.	5.00	
BELTING, HOSE AND PACKING.				
575	Driving belts of textile materials impregnated or coated with india rubber, or with external or internal layers of india rubber, or of india rubber with external or internal layers of textile material	100 K.	50.00	40.00
467	Fire and other coarse kinds of hose, combined or not with common metal, rough girths, and driving belts woven or knitted	100 K.	50.00	
579	Piston packing of coarse textile material in combination with india rubber	100 K.	40.00	
BOOTS AND SHOES.				
577	Boots and shoes of india rubber with or without soles of other material—unvarnished	100 K.	70.00	
	Varnished	100 K.	100.00	80.00
TIRES FOR VEHICLES.				
574	India rubber tubing for tires of wheels	100 K.	60.00	
	Other kinds with an underlayer of vegetable textile material; tubing of vegetable textile material impregnated or coated with india rubber; all these whether combined or not with common metals or their alloys.	100 K.	40.00	
578	India rubber tires for wheels of vehicles and covers for the same of textile materials impregnated or coated with india rubber or with an internal layer of india	100 K.	60.00	
OTHER GOODS.				
571	Rolled sheets of soft india rubber, cuttings and strips of unmanufactured india rubber, not vulcanized; also gutta percha paper	100 K.	5.00	

Tariff
No.

OTHER GOODS—Continued.

Tariff No.	OTHER GOODS—Continued.	Conven- General Tariff.	Tariff. m. pf.	Tariff. m. pf.
572	Cut sheets, patent sheets of crude, refined or dyed india rubber, mixed or not with sulphur or other material not vulcanized, also cuttings and strips of the same unmanufactured.....	100 K.	8.00	
579	Soft rubber goods when not chargeable at higher duty.....	100 K.	40.00	
576	Wagon covers, manufactured of coarse textile material impregnated or coated with india rubber, or with internal layer of india rubber.....	100 K.	30.00	
579	Floor cloths of soft india rubber with or without an underlayer of textile material or felt.....	100 K.	40.00	
	Varnished, dyed, printed or furnished with impressed patterns, with or without an underlayer of textile material or felt.....	100 K.	60.00	
581	India rubber print cloths and card cloths for carding factories, by special permission and under contract	100 K.	30.00	
583	Hardened india rubber for dental purposes	100 K.	100.00	
584	Hardened india rubber, vulcanite in plates, bars, cut up or not, but not further worked. Rough pressed goods of india rubber, shaped, but requiring further working. Unworked plates or sheets of hardened india rubber with an underlayer of textile material or paper.....	100 K.	10.00	
585	Tubes of hardened india rubber not further worked.....	100 K.	40.00	25.00
586	Other wares of hardened india rubber combined or not with other materials, so far as not falling under other classes subject to a higher duty by reason of such combination.....	100 K.	45.00	40.00
[General Note to Nos. 570 to 586.—Wares of gutta percha, balata gum, or of india rubber substitutes, or wares entirely or partly coated with these materials, so far as not specially mentioned, will be classed as india rubber ware.]				
909	Electric cables encased in a protective cover of metal, etc., to be laid under water or under the earth	100 K.	8.00	
573	India rubber threads drawn or cut; not combined with spun threads	100 K.	10.00	
	Combined with vegetable or animal spun threads loosely wound round or plaited thereon	100 K.	20.00	
	Wound round with silk or with yarn in which silk is contained.	100 K.	60.00	

Tariff No.	OTHER GOODS—Continued.	General Tariff.	Conventional Tariff.
	Wound round with other textile material	100 K	40.00
580	Textile materials or felt impregnated or coated with india rubber, or with internal layers of rubber; india rubber wares coated with textile materials or yarn wound thereon. Entirely or partly of silk.....	100 K.	180.00
	Of other textile material.....		100.00

In the fiscal year 1912 United States exports of rubber goods to Germany included: Belting, hose and packing, \$40,233; boots and shoes, \$102,220; tires for automobiles, \$1,160; all other tires, \$800; other goods, \$397,256; total, \$541,669.

AUSTRALIAN FEDERAL TARIFF.

Equivalents same as in England.

Pound sterling, \$4.866; Shilling, \$0.243; Penny, \$0.020.

The "General" Tariff applies to imports from the United States.

Tariff No.	CRUDE RUBBER, ETC.	General Tariff.	British Preferential Tariff.
351a	India rubber crude, rubber wastes, hard rubber in sheets.....	Free	Free
351b	India rubber powdered or reclaimed	15%	10%
PASTES, ETC.			
261b	Rubber cements and prepared adhesives	30%	25%

MACHINERY.

165	India rubber working machinery—hose machines	15%	15%
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BELTING, HOSE AND PACKING.

349	Rubber and other hose.....	25%	20%
353	Belts of leather, rubber and combined materials	25%	20%
433	Woven canvas hose, 2½ inches in diameter and over.....	Free	Free
423	Cotton, asbestos and other packings; including asbestos cloth (with or without wire) proofed with rubber.....	20%	20%

BOOTS AND SHOES.

346	Goloshes, rubber sand boots and "Plimsolls"	25%	20%
348	Rubber gum and wading boots....	Free	Free
350	Soles, pads and heels.....	25%	20%

TIRES FOR VEHICLES.

350	Pneumatic rubber tires and tubes therefor, valved or unvalved: Covers weighing each 2½ pounds or less. Tubes weighing each 1 pound or less.....	25%	20%
	Covers weighing each over 2½ pounds; tubes weighing each over 1 pound, or ad valorem..	1s. 6d. per pound 25%	1s. 2d. per pound 20%

Tariff No.	RUBBER TIRES OTHER THAN PNEUMATIC.	General Tariff.	British Preferential Tariff.
350	Rubber tires other than pneumatic	25%	20%
350	Rubbered tire fabric, tire rubber..	25%	20%

OTHER GOODS.

350	Rubber manufactures not already indicated and articles not elsewhere indicated in which rubber forms a part: Bandages, elastic stockings, leggings, knee caps, thigh pieces and wristlets: hat makers' press bags and rings, gas bags, sponge bags, rubber on textile, bed sheets of rubber, ear douches, all rubber invoiced as car syringes, cash mats, rubber stoppers or corks.....	25%	20%
351	Boot and apparel elastics, masticated rubber, india rubber syringes, enemas, injection bottles, urinals, air and water beds, air cushions and pillows, cut sheets, surgical tubing.....	Free	Free
364	Fountain pens, etc., when in fancy boxes	30%	25%
	When not in fancy boxes.....	5%	Free
145	Lawn sprinklers	15%	12½%
144	Wringers	20%	12½%
111	Diving dresses	Free	Free
328	Toilet combs and shaving sets....	25%	20%

In the fiscal year 1912 United States exports of rubber goods to Australia and Tasmania included: Belting, hose and packing, \$127,706; boots and shoes, \$223,394; tires for automobiles, \$24,081; all other tires, \$2,574; other goods, \$124,945; total, \$502,700.

SOUTH AFRICAN CUSTOMS UNION.

Equivalents same as in England.

Pound sterling, \$4.866; Shilling, \$0.243; Penny, \$0.020.

The General Duty applies to imports from the United States. Imports from Great Britain receive a rebate.

Tariff No.	BELTING, HOSE AND PACKING.	General Duty.
61	Bands and belting for driving machinery.....	3%
89	Conveying hose	3%
102	Packing and lagging for engines, machinery, piping and buildings.....	3%

TIRES FOR VEHICLES.

91	Rubber tires for perambulators imported in long lengths	3%
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OTHER GOODS.

119	Telegraph and telephone material.....	3%
81	Felt, rubberoid, uralite and similar substances for building purposes	3%

All goods not elsewhere chargeable with duty and not in free list will be charged with a general ad valorem duty of 15 per cent.

In the fiscal year 1912 United States exports to British South Africa included: Belting, hose and packing, \$201,229; boots and shoes, \$19,905; tires for automobiles, \$7,049; all other tires, \$5,773; other goods, \$29,163; total, \$263,119.

BELGIUM

Tariff No.	CRUDE RUBBER ETC.	Duties
19	Crude rubber	Free
19	Essence or extract of caoutchouc	Free
BELTING, HOSE AND PACKING		
33	Machine belting of leather rubber or like material	100 Kil. 30.00
TIRES FOR VEHICLES		
70	Rubber tires for wheels of vehicles, including those in which other material enters, but in which rubber predominates, according to weight—solid tires	100 Kil. 65.00
	Pneumatic tires, shoes for automobiles and motorcycles with iron studded protective tread	100 Kil. 130.00
	Other kinds	100 Kil. 116.00
	Outer tires for vehicles of less weight than 9½ Kilos.	100 Kil. 90.00
	Same, above 9½ Kilos.	100 Kil. 60.00
	Inner tubes for automobiles and motorcycles	100 Kil. 170.00
	For other vehicles (including complete pneumatic known as "Boyaux" or tires for racing wheels, consisting of outer protective shoe and an inner air tube).	100 Kil. 150.00
OTHER GOODS.		
64	Elastic tissues	100 Kil. 320.00
27	Hosiery containing silk and 50 per cent. or less of india rubber. Gloves and mittens ornamented or not.	100 Kil. 450.00
54	Plaited cord and tissues of asbestos, combined or not with caoutchouc.	5%
10	Manufactures of rubber, not coming under a more favorable number of the tariff	10%

In the fiscal year 1912 United States exports to Belgium of rubber goods included: Belting, hose and packing, \$7,733; boots and shoes, \$57,016; tires for automobiles, \$51,620; all other tires, \$5,468; other goods, \$78,576; total, \$200,413.

PANAMA.

Equivalents.—Balboa, \$1; Kilo, 2.2 lbs.

Wares and articles of commerce imported for sale or consumption in the territory of the Republic of Panama are taxed as follows:

Rice, wheat flour, butter, unprepared maize in the grain and lucern—on net value	10%
All other wares and articles	15%

In the fiscal year 1912 United States exports of rubber goods to the Republic of Panama included: Belting, hose and packing, \$103,209; boots and shoes, \$11,227; tires for automobiles, \$4,073; all other tires, \$7,137; other goods, \$28,104; total, \$153,750.

TURKEY IN EUROPE.

With the exception of certain special duties on gems and precious stones, all imported goods pay a duty of 11 per cent.

In the fiscal year 1912 United States exports of rubber goods to Turkey in Europe included: Boots and shoes, \$146,602; other goods, \$18; total, \$146,620.

ARGENTINA.

Tariff No.		Duty.
1	All goods not specially enumerated in the present law or which are not exempt from duty	25%
3	Articles of all kinds of tissues, completely or partly made up	40%
9	Caoutchouc in natural state	5%
3	Footwear of all kinds, finished or in pieces	40%
8	Automobiles of all kinds, complete, and spare parts separately	10%

In the fiscal year 1912 United States exports of rubber goods to Argentina included: Belting, packing and hose, \$38,751; boots and shoes, \$16,346; tires for automobiles, \$10,196; all other tires, \$5,935; other goods, \$73,586; total, \$144,814.

NEW ZEALAND.

Equivalents.—Pound sterling, \$4.860; Shilling, 80.43; Penny, 30.2.

The General Tariff applies to shipments from United States.

Tariff No.	BELTING, HOSE AND PACKING.	General Tariff.	British Preference.
479a	Belting for driving machinery other than leather	10%	Free
486a	Engine packing	10%	Free
481a	Canvas, india rubber or other hose, tubing or piping, armored or otherwise	20%	Free
BOOTS AND SHOES.			
106	Shoes or goloshes known as "Plimsolls" with molded india rubber soles	33¾%	22½%
107	Champion, gymnasium, yachting and lawn tennis boots and shoes with molded india rubber soles	33¾%	22½%
397	Boot elastic	Free	Free
107a	Goloshes and overshoes of all kinds of rubber	33¾%	22½%
107b	Shoettes and sandals, not otherwise enumerated	33¾%	22½%
308a	Children's goloshes, etc.	10%	Free
398b	Molded shoe and slipper soles of rubber	10%	Free
486d	Gum boots, half knee, knee or thigh, with soles of leather or rubber	Free	Free

TIRES FOR VEHICLES.

470	Rubber cloth, rubber tires, pneumatic tires, outer covers of rubber, inner tubes (for the manufacture of motor cars)	Free	Free
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OTHER GOODS.

489	India rubber gloves and india rubber valves for pumps	Free	Free
95	Apparel and ready-made clothing	25%	25%
101	Apparel made to order	40%	40%
147	Hair and toilet combs	30%	20%
485	Diving dresses	10%	Free
370	Brace elastic and brace mountings	Free	Free
309	Tarpaulins, wagon covers, etc.	30%	20%
396	Waterproof material in the piece, having within or upon it a coating of india rubber	Free	Free

In the fiscal year 1912 United States exports of rubber goods to New Zealand included: Belting, hose and packing, \$31,464; boots and shoes, \$39,143; tires for automobiles, \$11,847; all other tires, \$9,921; other goods, \$45,355; total, \$137,730.

CHILE.

Equivalents.

Peso 1/100 of a dollar. G., gross; N., net. W. I. P., with interior packing.

Tariff No.		Valuation Per kilo. in Pesos.	cent- age of Duty.
309	Raw	G. 0.40	5%
	PASTES, ETC.		
332	Rubber solution for waterproof coats....W. I. P.	2.00	25%
2,267	Gutta percha or traumatic solution....W. I. P.	4.00	25%
294	India rubber residues.....G.	0.40	25%
	BELTING, HOSE AND PACKING		
145	Machine belting with or without parts of metal .....W. I. P.	4.00	5%
375	Machine belting with or without tissue or parts of metal .....G.	3.00	5%
1,166	Machine beltings of hemp or other vegetable fiber, combined or not with rubber, waxed or painted, with or without parts of metal.....G.	2.50	5%
1,305	Machine beltings of cotton tissue, whether rubbered or not, waxed or painted, with or without parts of metal .....G.	2.50	5%
1,450	Same as 1,305, but linen tissue.....G.	2.50	5%
1,578	Same as 1,305, but of tissue or camels' hair .....G.	2.50	5%
966	Cables, etc., for machine packing.....	1.25	25%
162	Hose with or without parts of common metal .....W. I. P.	2.50	35%
1,340	Hose with or without parts of common metal .....G.	2.50	25%
372	Tubes or hose for liquids, etc.....	1.40	25%
373	Same, for gas lamps.....	6.00	25%
375	Machine belting with or without tissue or metal parts.....	3.00	5%
	BOOTS AND SHOES.		
114	Shoes or overshoes ("Zuecos") top boots, boots or tips of rubber, with or without interior lining or exterior part of wool or other material, fin- ished or not, for the rain.....N.	4.00	25%
382	Soles and parts for footwear.....	6.00	25%
	TIRES FOR VEHICLES.		
379	Solid tires for vehicles.....	4.00	25%
380	Pneumatic tires .....G.	8.00	25%
	OTHER GOODS.		
2,087	Bandages, etc., of rubber, with or with- out parts of any other material except wool or silk.....	16.00	25%
2,088	Bandages, etc., of cotton or other vege- table fiber, with or without rubber... .....G.	16.00	25%
2,089	Bandages, etc., of wool, with an admix- ture of common material.....	16.00	25%
2,090	Bandages, etc., of silk or with admixture of common material.....	56.00	35%
2,091	Baths of rubber or of tissue rendered waterproof by rubber.....	6.00	25%
2,133	Shower baths of rubber or of rubbered tissue .....G.	10.00	25%
311	India rubber in plates or cables with cloth or wire gauze.....	1.20	25%

Tariff No.

OTHER GOODS -Continued.

Per-
Valuation cent-
Per Kilo. age of
in Pesos. Duty.

966	Cables, ropes or yarn whether or not combined with cotton, hemp, jute, rub- ber or metal, for machine packing...	1.25	25%
1,207	Cables for mines or other purposes...G.	0.75	25%
370	Alphabets or letters glued on wood or metal	5.00	25%
371	Rings for packing tins.....	2.00	25%
374	Brushes for teeth and nails.....	6.00	35%
376	Erasers	6.00	25%
377	Rubber prepared for dentists.....	16.00	25%
378	Pads for animals.....	4.00	25%
381	Floor mats with figured and open work parts	4.00	25%
383	Life belts, with or without tissue.....	4.00	25%
384	Snuff boxes	10.00	35%
310	India rubber in plates.....G.	2.00	5%
313	Hardened or vulcanized rubber in plates....W. I. P.	4.00	25%
312	Stoppers for bottles or flasks.....G.	12.00	Free
386	Hairpins and arrows.....	10.00	20%
387	Cigar and cigarette holders.....	15.00	35%
388	Cigar cases	10.00	35%
389	Cylinders and discs with records for phonographs and gramophones.....	5.00	25%
390	Same, without records.....	2.50	25%
391	Tickets, stamped, for railways or other purposes	15.00	25%
392	Same, unstamped	8.00	25%
393	Combs, plain or openwork, ornamented, etc.	15.00	25%
394	Same, circular, for children.....	10.00	25%
2,236	Nipples of rubber.....	6.00	25%
2,237	Nipples or teats of rubber.....	10.00	25%
2,190	Syringes of rubber.....	10.00	25%
2,191	Syringes of hardened rubber, with or without parts of glass.....	6.00	25%
1,313	Elastics for bandages, bands or belts....	6.00	25%
1,314	For footwear	6.00	5%
1,456	Elastics with or without admixture of common material, for bands belts or girdles .....N.	6.00	25%
1,457	For footwear.....N.	6.00	5%
1,583	Elastics with or without admixture of common material, for bands, belts or girdles .....N.	10.00	25%
1,584	For footwear.....N.	6.00	5%
1,718	Elastics with or without admixture of common material, for bands, bandages or belts .....N.	20.00	35%
1,719	For footwear.....N.	10.00	5%
1,338	Garters and hip suspenders, with or without rubber.....W. I. P.	10.00	35%
1,339	Same, with slight admixture of silk....W. I. P.	20.00	35%
1,736	Garters and hip suspenders.....W. I. P.	40.00	35%
2,271	Suspenders of cotton or linen...W. I. P.	8.00	25%
	Of silk, with or without admixture of common material.....W. I. P.	20.00	35%
1,663	Braces, with or without admixture of common material, parts of any other material or of rubber, for trousers....W. I. P.	9.00	35%

Tariff No.	OTHER GOODS—Continued.	Valuation Per Kilo in Pesos.	Per-centage of Duty.
1,664	The same, with a slight admixture of silk	W. I. P. 15.00	35%
1,787	Suspenders, with or without admixture of a common material, or india rubber with or without parts of any other material	W. I. P. 30.00	35%
1,780	Dress shields of rubbered silk tissue, with or without admixture of a common material	W. I. P. 15.00	35%
1,396	Dress shields of rubbered cotton tissue	W. I. P. 8.00	25%
1,500	Dress shields of rubbered linen tissue	W. I. P. 8.00	25%
1,651	Dress shields of rubbered woolen tissue	W. I. P. 8.00	25%
179	Braces or suspenders, with or without parts of rubber or any other material, for trousers	W. I. P. 10.00	35%
1,401	Braces or suspenders of cotton tissue, with or without a slight admixture of vegetable material, whether or not containing rubber or parts of any other material	7.50	35%
2,165	Gutta percha refined in sticks.....	16.00	25%
395	Articles not specially mentioned.....	6.00	25%
385	Articles not specially mentioned.....	8.00	25%

In the fiscal year 1912 United States exports to Chile included: Belting, hose and packing, \$57,315; boots and shoes, \$7,056; tires for automobiles, \$354; all other tires, \$23,682; other goods, \$25,833; total, \$114,240.

CUBA.

Equivalents.

Dollar as in United States; Kilo, 2.2 lbs.; 100 Kilos, 220 lbs.

Tariff No.	CRUDE RUBBER.		Rebate for General for U. S. States.	
78c	India rubber and gutta percha, crude or melted in lumps	100 Kilo	\$3.90 30%	\$2.73
	BELTING, HOSE, ETC.			
309a	Rubber hose and piston packing of rubber alone	Kilo	.065 20%	.052
226	Of rubber and fabrics...		25% 20%	20%
226	India rubber in sheets; pure, for valves, square or round; pure, more than 3/8 inch, reinforced with cloth, wire or lead; diaphragms for air brakes, rings for packing and centrifugals..		25% 20%	20%
229	Rings for car springs...		31 1/4% 20%	25%
309	Pure rubber in sheets not more than 3/8 inch.	Kilo	.065 20%	.052
	BOOTS AND SHOES.			
314	Waterproof and rubber fabrics, including boots and shoes of rubber...	Kilo	0.325 20%	0.26
	TIRES FOR VEHICLES.			
226	Rubber tires and other accessories or separate parts not specifically provided for		31 1/4% 20%	25%

Tariff No.	OTHER GOODS.		Rate Rebate for General for U. S. States.	
314	Waterproof fabrics:			
	(a) Cotton.....	Kilo	0.325 20%	0.26
	Waterproof fabrics in the piece, imported by manufacturers for use in the manufacture of raincoats....	Kilo	0.25 20%	0.20
	(b) Wool or silk.....	Kilo	0.65 20%	0.52
	Waterproof fabrics in the piece, imported by manufacturers for use in the manufacture of raincoats....	Kilo	0.50 20%	0.40
	(Made up articles and manufactures of the materials dutiable under this number, except boots and shoes of rubber, shall be liable to a surtax of 30 per cent.)			
315	All other articles, wares, merchandise and effects not otherwise provided for, except raw material	Per Cent.	32 1/2% 20%	26%

In the fiscal year 1912 United States exports of rubber goods to Cuba included: Belting, hose packing, \$156,819; boots and shoes, \$7,322; tires for automobiles, \$21,714; all other tires, \$80,586; other goods, \$129,762; total, \$396,203.

BRAZIL.

Equivalents.

Milreis (1,000 Reis), (gold), 54.6 cents; Paper, 32.4 cents; Kilo, 2.2 lbs.; duties on most articles payable 65 per cent in paper and 35 per cent in gold.)

Tariff No.	BELTING, HOSE AND PACKING.	Duty Per Kilo in Reis.
35	Transmission belts for machines.....	1,000
	BOOTS AND SHOES.	
35	Boots of all kinds.....	3,000
	TIRES FOR VEHICLES.	
30	Pneumatic tires for motor car wheels	5%
	OTHER GOODS.	
35	Belts, suspenders, garters, galloons laces, plaits, etc.: Covered with silk or with silk mixed with other materials	*30,000
	Covered with any other material....	*7,000
	Rubber prepared or in lump for dentists, vulcanite, etc.....	*3,200
	Tubes, thread, leaves or sheets.....	*1,200
23	Wire cables	20%
18	Garters and suspenders, plain or embroidered of silk not otherwise mentioned: Of pure silk.....	50,000
	Of silk and cotton.....	25,000
35	Manufactures of india rubber, combined with tissues of cotton, wool or linen: In the piece or in cuttings	4,000
	In articles not specially mentioned...	7,000
	Combined with tissues of pure or mixed silk: In the piece or in cuttings	7,000

*Subject to rebate under the Preference clause.

Tariff No.		Duty Per Kilo in Reis.
OTHER GOODS—Continued.		
	In articles not specially mentioned...	15,000
28	Erasers for common use in offices with common handles.....	2,400 Per Dozen
	With fine handles.....	20,000 Per Dozen
35	Combs, rulers and penholders.....	4,000
	Door mats	1,300

The following articles whether vulcanized or not will continue to receive a preference of 20 per cent., when imported from the United States, according to the latest decision of the Brazilian Government:

	Duty Per Kilo in Reis.
Basins and other articles for domestic use, funnels, capsules and bottles.....	2,600
Walking sticks, canes, whips, etc.....	5,000
Tobacco pouches, mouthpieces and match cases.....	4,000
Dolls, toys, etc.....	3,500
Buttons of all kinds.....	4,000
Footwear	3,000
Packing for machinery.....	1,800
Combs, rulers and penholders.....	4,000
Fans	3,000
Belts, suspenders, garters, braids, etc., covered with pure or mixed silk.....	30,000
Covered with any other material.....	7,000
Dental rubber	3,200
Bracelets, earrings, medallions, etc.....	10,000
Tubes for flowers.....	7,000
Rubber—combined with tissues of cotton, wool or linen	4,000
Rubber—combined with tissues of silk.....	15,000
Hose, threads, sheets and plates.....	1,200
Mats	1,300
Articles not specially mentioned.....	50%

In the fiscal year 1912 United States exports of rubber goods to Brazil included: Belting, hose and packing, \$40,777; boots and shoes, \$41,036; tires for automobiles, \$24,952; all other tires, \$11,273; other goods, \$81,201; total, \$199,239.

JAPAN.

Equivalents.

Yen, 49.8 cents; Kin, 1.33 lbs.; 100 Kin, 133 lbs.; Millimeter, .039 inch; Centimeter, .39 inch.

Tariff No.		Specific Duties Per 100 Kin in Yen.	Ad Valorem Duties.
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CRUDE RUBBER, ETC.			
143	Crude india rubber and gutta percha and substitutes		Free
630	Waste or old india rubber and gutta percha, fit only for remanufacturing....		Free

PASTES.

629	India rubber solution (including receptacle)	18.10	
	India rubber paste, reclaimed india rubber and other unvulcanized india rubber....		20%

BOOTS AND SHOES.

355	Boots of india rubber.....	50.00	
	Overshoes of india rubber.....	51.60	

TIRES FOR VEHICLES.

564	Parts of automobiles excluding motive machinery; general tariff 30 per cent., but under a special clause.....		25%
566	Cycle parts excluding motive machinery..	114.00	

Tariff No.		Specific Duties Per 100 Kin in Yen.	Ad Valorem Duties.
BELTING, HOSE AND PACKING.			
337	Woven belting for machinery and woven hose: Of cotton.....		25%
	Other	24.00	
629	Belts and belting for machinery.....	22.20	

OTHER GOODS.

629	Manufactures of india rubber and gutta percha (soft): Soft rubber in lumps....		20%
	Rods and cords with metal or fibers.....	8.68	
	Other		20%
	Plates and sheets with metals and yarns..	7.40	
	Not exceeding 1 m. m. in thickness.....	95.60	
	Other	50.30	
	Tubes armored with metal.....	15.30	
	Other, combined with tissues, etc.....	13.80	
	Other	93.20	
629	Threads, strips, bands, rings and washers combined with metal, etc.....	15.30	
	Other	55.60	
	Other rubber: In lumps, bars or rods, plates and sheets.....	35.40	
	Tubes	38.90	
	Rings and washers.....	43.70	
	Combs, including inner packing.....	157.00	
	Other goods		40%
631	Hard fibres (rods, plates, sheets, tubes, etc.)	11.40	
335	Air cushions: Wholly or partly of silk...	315.00	
	Other	124.00	
629	Dental rubber	75.80	
486	Insulated electric wires:		
	(1) Armored with metals: Submarine telegraph or telephone wires.....		Free
	Other combined with india rubber and gutta percha.....	11.00	
	Other	5.50	
	(2) Other: Flexible cords combined with silk		25%
	Other	18.00	
	Other than flexible cords combined with india rubber or gutta percha...	14.50	
	Other		25%
344	Raincoats: Wholly or partly silk.....		50%
	Other	136.00	
320	Elastic webbing, cords, braids, etc., exceeding 8 centimeters in width:		
	Partly of silk.....	148.00	
	Other	86.00	
	Other: Partly of silk.....	40%	
	Other	30%	
629	Erasers	24.90	
	Water bottles	48.50	
	Teats (including inner packing).....	132.00	
	Mats and Matting.....		30%
	Other rubber goods.....		40%

In the fiscal year 1912 United States exports of rubber goods to Japan included: Belting, hose and packings, \$74,721; boots and shoes, \$31,350; tires for automobiles, \$13,531; all other tires, \$9,703; other goods, \$80,426; total, \$209,731.

ITALY.

Lira, 19.3 cents; 100 kilos, 220 lbs.

shown in the column below designated as "General Tariff" are applicable to imports from the United States, except in a few instances that come under the "Conventional Tariff" rate, as shown in the second column. The figures appearing in this column apply to imports from the United States instead of the corresponding figures in the general column.

Tariff No.	CRUDE RUBBER.	General Tariff Per 100 Kilos in Lire.	Conventional Tariff Per 100 Kilos in Lire.
FORMS OF RUBBER			
365b	In thread	75.00	
365c	In sheets:		
	(1) Saw	60.00	
	(2) Combined with tissues....	60.00	
	(3) Combined with gutta percha	40.00	
	(4) Other, including plates of hard rubber	50.00	
365d	In tubes or pipes:		
	(1) Of sawn sheet.....	60.00	
	(2) Combined with tissues....	60.00	40.00
BELTING, HOSE AND PACKING			
366	Transmission belts of india rubber or gutta percha combined with tissues.....	60.00	
268	Belting for machinery finished	100.00	85.00
367	Gummed tissues in the piece, for the manufacture of card clothing		20.00
FOOTWEAR AND HOLES			
368	Footwear of india rubber:		
	(a) Lined, covered or trimmed with another material...	200.00	125.00
	(b) Other	50.00	
OTHER GOODS			
369	Elastic trimmings, ribbons and tissues	140.00	130.00
370	Articles of clothing and travel of india rubber or gutta percha mixed with tissues...	Duty on tissues plus 50%	
	(1) Mixed with tissues of cotton and silk	Duty on tissues plus 40%	
	(2) Mixed with tissues of wool	Duty on tissues plus 35%	
461a	Electric wires and cables composed of one or more metallic conductors, covered with textile materials and varnish, even with gutta percha or india rubber	60.00	50.00
461b	Electric cables composed of one or more metallic conductors, even covered with insulating material, strengthened and protected with iron or any other metal, including submarine cables	30.00	28.00

Tariff No.	OTHER GOODS—Continued.	General Tariff Per 100 Kilos in Lire.	Conventional Tariff Per 100 Kilos in Lire.
371	Articles of india rubber or gutta percha not mentioned:		
	(a) Of sawn sheet.....	60.00	
	(b) Mixed with tissues.....	60.00	
	(c) Other, including articles of hardened rubber not specified	50.00	

In the fiscal year 1912 United States exports of rubber goods to Italy included: Belting, hose and packing, \$2,237; boots and shoes, \$50,325; tires for automobiles, \$2,387; all other tires, \$13,425; other goods, \$43,917; total, \$112,291.

A LOWER PRODUCTION OF ASBESTOS.

The frequency with which asbestos is used in combination with rubber makes the supply and production of the former article a subject of interest to the trade in general. Domestic production of asbestos—confined chiefly to the states of Georgia, Vermont and Wyoming—amounted in 1912 to 4,403 short tons, valued at \$87,959; and in addition to this there was imported into the United States from Canada (the greatest asbestos producing country in the world) 71,426 tons, this being 67 per cent. of the Canadian production for the year and more than 80 per cent. of the total Canadian exports of asbestos for that period. A considerable proportion of the asbestos produced in the United States in 1912 was superior in quality to the production of 1911, so that while actual production fell off 42 per cent. for the year 1912, the decrease in value amounted only to 27 per cent. The United States remains supreme in asbestos manufactures, and the productive resources of the country in respect to this mineral would no doubt be developed to a much greater extent were it not for the nearness and reliability as well as the extent of the Canadian deposits. The best quality of asbestos found in the United States is a deposit in Arizona, in the Grand Canyon of the Colorado, a point so inaccessible as to very materially advance the cost of getting it to market.

A NEW RUBBER PLANT AT EAST LIVERPOOL, OHIO.

The factory of the Morgan & Marshall Rubber & Tire Co., which has been mentioned in earlier issues of this publication as in process of construction at East Liverpool, Ohio, has been completed and the work of tire production is now going on. The ultimate capacity of this plant is placed at 1,000 tires a day, but its daily output at present is 265. The plant consists of three buildings—a main building, 60 x 200 feet, a machine shop and tire building shop, 50 x 95 feet in size, and a boiler room, 40 x 60 feet. The company confines its attention to the manufacture of one tire, namely, the "Laplock" tire, in which—as is implied by the name—the two sides of the tire overlap at the rim. The leading spirits in this new company are three doctors—which, however, follows precedent, as the originator of the great Goodrich company was a physician. The three East Liverpool doctors are: R. J. Marshall, the president of the company; W. J. Hobbs, vice-president, and Morgan Howells, general manager of sales. The general sales offices are located in Pittsburgh, Pennsylvania.

The same people are interested in another new plant—almost a duplicate of the East Liverpool plant—which is located just across the Ohio river in the town of Chester, West Virginia. This concern, the Chester Rubber Tire & Tube Co., is a distinct corporation and makes a different style of tire. Its capacity is the same as that of the Morgan & Marshall plant and its tires are distributed through the same selling force.

The Editor's Book Table.

CAOUTCHOUC (INDIA RUBBER), BY DR. A. J. ULTÉE, DIRECTOR OF THE Royal Dutch Testing Station at Dordrecht, Holland, 1913. H. D. F. de Witte & Zoon. [Paper, 8vo., 98 pages, with 58 illustrations.]

THIS handy volume forms one of the series of twelve popular handbooks dealing with the agricultural products of the Netherland Indies in course of publication under the editorship of Dr. J. Dekker, director of the Dutch Colonial Museum.

After an introduction of historical character Dr. Ultée successively treats: The cultivation of *Hevea Brasiliensis*; insects and pests; tapping; preparation; *Ficus elastica*; applications. Under the section of *Hevea* the first subject treated is climate and soil. The necessary conditions, it is remarked, are realized in various tropical countries, especially in Malacca, Sumatra and

Many of the 58 illustrations are highly effective, and three of them are here reproduced. In one of them is shown a plantation of *Hevea* trees which have attained the age of 7 years, while



Hevea TREES SEVEN YEARS OLD

some parts of Java, where the growth of rubber is not less productive than in Brazil. The details of clearing next claim attention, followed by a full discussion of the various questions affecting planting and the care of rubber trees. Catch-crops meet with detailed consideration, with diagrams illustrating the combination of Robusta coffee and *Hevea*. The intermediate system of culture originated at the time when some uncertainty was felt as to the future results of *Hevea*, and when it was desired to secure an alternative crop.

Insects and plagues are next treated, followed by a chapter on tapping in which the details of that process as well as the utensils employed are fully discussed. Preparation of rubber is then taken up, including coagulation, drying and packing.

Following the rubber to its ultimate applications, the subjects of vulcanizing, regeneration, substitutes, synthetic rubber and manufactured rubber articles are successively gone into in detail.

As affording a quantity of valuable information about rubber, Dr. Ultée's work will be appreciated by many people in the Netherlands who are interested in this subject.



TAPPING A 1 YEAR OLD *Hevea*

another represents the tapping of a 5-year-old *Hevea*, with the tapper engaged in the operation. A third illustration shows the



PURIFICATION AND COAGULATION OF LATEX

further progress of the rubber toward a marketable stage by purification and coagulation.

HOW IT LOOKS TO AN AMERICAN IN MEXICO.

(The letter printed below comes from an American who has been a resident of Mexico for twenty-five years and is familiar with all phases of the Mexican situation.)

I AM not afraid of the future of rubber growing in Mexico. As to prices—at low figures the Amazons cannot compete. Also when the British growers, with their capacity for organization and the capital back of them, get through dumping their present large surplus into the market, prices will take on a different aspect—perhaps not very high prices, but profitable ones. We can afford to wait a while. If there is no market for *Castilloa*—well and good; then it's *Pará*, and so much the better.

Now about Mexico. If there is any one thing the average decent Anglo-Saxon likes, it is fair play—a good sporting sense of a square deal all around and no grudge if knocked out. Isn't that so? Now, then, what do we see? Those of us foreigners who have lived here in Mexico for anywhere from ten to twenty-five years are keenly alive to what we consider defects of character in the individual, and also in society and in the Mexican Government. There are certain elements pretty general all over Spanish America which we are far from sympathizing with, yet there is so much to be said on the other hand that life has been pleasant in these countries. They are an impulsive, generous, kind hearted people—passionate it is true, but just as passionate in their demonstrations of friendship as of the reverse; not as well balanced as we of colder blood, but who is to judge of these racial differences and be sure that it is a just judgment?

I return to my query—now what do we see? Three years of revolution—cruel internecine troubles because of which foreigners have in many cases suffered much in their possessions. And a few lives have been lost—not many among foreigners—least of all among Americans; nevertheless some. During all this time what did the government of the United States do? Nothing worthy of the name—either in behalf of its own citizens or for those of other nationalities, whom, under the Monroe doctrine—an infamous doctrine in the light of modern conditions—it was morally bound to protect. We did not exactly want intervention, i. e., an armed invasion; but we did look for a far different policy from the United States than that carried out during the three years in question. We at many times during this period—when suffering loss, anxiety, and actual attack or assault by bandits or bands of revolutionists—felt bitter enough against Mexico and things Mexican, bitter enough, I repeat, to suit the ideas of the most ardent Jingo. Yet at this juncture, how do you account for the feeling of 95 per cent. of all the Americans and 100 per cent. of all other foreigners in Mexico at this time—that General Huerta is right and the United States wrong? Answer that if you can. You in the States can't, and I can—that's the difference. We know the facts, and you don't.

It is a very long story, and I can't go into it at this writing. Briefly summarized it is something like this: Madero stood for constitutional government and made a monstrous failure. He surrounded himself with iniquitous persons and millions of money ran out of the national treasury like water, with no account of where it went. He refused to resign, declared if deposed he would retire to the Southern Sierras and stir up a greater revolution than ever. He was assassinated—that's the word. By whom and at whose instance, individually or collectively, has never been disclosed—but it makes no difference in the main as affecting things as they are (not what they ought to be—that's another story). The result was General Huerta's ascent to power, as Provisional President under the law and constitution of Mexico—despite the United States' failure to recognize him. Had the United States recognized him long ago, peace would have been established just that much sooner, and there would have been a chance for a successful fair election. These are the impregnable facts, and every intelligent foreigner realizes them.

We all think Gamboa wrote the only reply he could have written and maintain any shred of national dignity. Now here is another feature that disgusts every foreigner resident in the country, and Americans almost to a man. During the three years nothing has been done in defense of foreigners by the United States. Our complaints were treated, to all appearances at least, so far as any material evidence was concerned, with indifference. Intervention too costly a thing to think of! Neither government nor people of the United States—so much taken up with their own money making—and that's the truth—gave a rap for us.

Well, we were pretty sick of the vaunted power of the United States, which neither protected its citizens nor did its duty by other foreigners under the obligation of that detestable "doctrine" so much discussed of late. Suddenly, when things are enormously improved under Huerta's military management of affairs, a queer "Envoy" idea is incubated and he comes to Mexico to tell Huerta to get out and to arrange an impossible armistice with brigands and rebels (Think of it!); to hold a free election—also to tell Americans to leave the country in a third-class passage, or pay their own way. Doubtless many poor devils have been glad to accept his advice. What they are going to do for a living when they get to the States perhaps President Wilson can tell them—I can't. Outside of Chihuahua, Sonora and thereabouts, practically no Americans are leaving. It is not easy to throw up a \$300 job, or carry off in your pocket a railway, a mine, a plantation or any other possession worth holding on to—not to mention a paying commercial business. It's silly—that's all there is to it.

Let us hope it will all come out well in the end. Yet I can tell you, as against the opinions of a Cabinet Officer and a lot of Congressmen and Senators whose opinions about Mexico I have absolutely no respect for, that the overwhelming opinion of Americans in Mexico is all for Huerta and that Gamboa's reply was correct. Simply fair play—a decent sporting sense of give and take, and no rubbing it in with bribes or promises to ask American bankers to supply money for Mexico. Briefly then, during all the past three years we have been neglected by our government. The United States did not give a copper for us or our interests. Now, when the United States national dignity feels hurt at a very clear and correct reply to certain overtures, there is a great uproar. Well, it savors of a certain kind of selfishness and we here in Mexico don't like it. Merely fair play is all we ask.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha from the United States for the month of September, 1913, and for the first nine months of five calendar years:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
September, 1913.....	\$211,342	\$126,903	\$680,400	\$1,018,645
January-August	1,680,443	856,050	5,865,815	8,402,308
Total, 1913.....	\$1,891,785	\$982,953	\$6,546,215	\$9,420,953
Total, 1912.....	1,888,433	1,014,688	6,016,371	8,919,492
Total, 1911.....	1,701,441	1,349,380	5,402,984	8,453,805
Total, 1910.....	1,592,594	1,664,215	4,258,968	7,515,777
Total, 1909.....	1,301,497	1,127,806	3,059,146	5,488,449

The above heading, "All Other Rubber," for the month of September, 1913, and the first nine months of the three calendar years, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
September, 1913.....	\$321,815	\$42,153	\$363,968
January-August	2,922,200	387,515	3,309,715
Total, 1913.....	\$3,244,015	\$429,668	\$3,673,683
Total, 1912.....	2,533,635	443,443	2,977,078
Total, 1911.....	1,941,773	437,201	2,378,974

Will 1914 See a Shortage in Rubber?

By Our Correspondent Resident in Singapore.

I WONDER whether the originators of the present bear raid on rubber ever dreamed of the ramifications it would expand into! I am of opinion that it will act as a boomerang—which, if it misses its primary object, returns to, and probably hits the thrower harder than it would have hit the “throwee.” One result is the shutting down altogether of operations on new areas now ready for tapping—which I advocated months ago. Also a great restriction in outputs is imminent, as the bulk of the crop now produced will not do more than pay expenses—and barely that—at 2s. per pound.

The net result is that unless there is a very big rise in the selling price in the coming year, the crop may conceivably be very little bigger, if any, than this year's, which will bring about a serious shortage of output. Manufacturers are taking all that is now being produced, including remnants of cheap rubbers, so that a minimum of consumption has already been established of about 120,000 tons per year.

As the present prices have caused the closing down of practically all the cheap wild rubbers, Congo, West Africa, East Africa, etc., and as there is great distress in Brazil *re* the cheaper grades, so that these will no longer be available as part of the world's supply, it is quite conceivable that the 1914 crop will not amount to more than 100,000 tons in all. Manufacturers have been counting on a supply of about 140,000 tons of cheap rubber for next year. If they are caught short 40,000 tons of prospective supply, what then? How about future contracts for the delivery of goods? The collapse of the rubber boom will be child's play compared to the result of manipulators' greed arising out of the present situation.

Rubber cannot be produced in a moment, and wild rubber collecting schemes, once abandoned, take a lot of reorganizing, especially when it is well known that there is no permanent future for it, and that it must cease again in a year at most. On all estates here managers are cutting down expenses in every way, coolies are being dismissed and a general state of arrested development is the universal condition.

The price of rubber having been forced below the average possible price of production for the year, the financing of many estates has become an acute problem, which will be permanently reflected in the possibility of their future existence. It has apparently been forgotten by the manipulators that fully one-half of our planted areas are not yet in bearing, and that a great deal of this has to be maintained and equipped out of revenue, or by raising debentures in place of reserve shares which it is no longer possible to place on the market. All this has had a most unhealthy effect, because it has come a year too soon. It has just happened as it would to a child if it were forced to try to walk alone before it was a year old. Given another year of reasonable price, say 3s. 6d., for rubber, and the great majority of estates would have turned the corner with the bulk of their planted areas opened to tapping, and so would have been self-supporting and able to maintain a steady yield sufficient to guarantee manufacturers against unexpected shortage, as the plantation crops can be estimated almost to a ton.

If the present price continues, which seems inconceivable, then many estates will shut down altogether for a year or so. On the other hand, if the attempts made to form rubber growers' protection associations, in England and here, take full effect, then manufacturers and manipulators will be caught between the upper and the nether millstones and free trading in the crop will be at an end. They will have only

themselves to thank for this, too, as they have simply driven plantation investors to drastic measures in self defense. The manipulators who have attacked a British industry with a capital of £60,000,000 sterling, have some nerve and will want more before they are through.

If the manufacturers—and this appeals with great force to those in the United States of America, as they use about one-half of the world's supply—would only get into closer touch with the plantations themselves, they would avoid much of the inconvenience they make for themselves by their conservatism. The present system of buying through brokers in New York and Boston came into being in the old sailing ship days when it took many months to get anything from the tropics and there was no cabled information. Now, a manufacturer in, say, Akron, can know the exact state of the market, the visible supply and the future prospects in, say, Singapore or Colombo, in a few hours, so that he is in a position to make any arrangements he likes with regard to supply, with a certainty of being able to obtain his requirements direct from the producing centers without upsetting the market and the producing end. I take it that a steady supply at an average price would suit the manufacturer better than 100 per cent. fluctuations. He will certainly learn a lesson shortly about the results of playing with an immature supply.

The yield for Mid-East plantations will be about 45,000 tons for 1913 (it would have been 50,000 tons but for the slump), and if the low prices continue no new areas will be brought into tapping at all in 1914, so that only a normal increase on present tapped areas will ensue, yielding, say 55,000 to at most 60,000 tons—instead of 70,000 tons or more. Brazil will certainly be down 10,000 tons; Guayule is no more, at least for the present; Congo and East and West Africa will only produce a few thousand tons at best in place of 20,000 tons odd. Borneo rubber and jelutong are simply wiped off the slate already, and Central America will not produce anything like anticipated yields—so there you are. The year 1914 is likely to open with a crop prospect of between 100,000 and 110,000 tons, in place of the 140,000 tons manufacturers have been counting on, and as they start making forward contracts for supply for next winter's goods they will find themselves “up against it.” This will send up the price tremendously, but no one is likely to reopen up wild rubber to any great extent on the strength of it, as all the world knows now that by 1915 plantations can supply all that the world is likely to want, together with the best Fine Hard Para, which alone of wild rubbers has a possible chance of survival.

Manipulators have, in fact, counted on an overproduction that did not exist, and on the possibility of plantations trying to average profits by increasing outputs, not understanding planting finance. Instead of this, many estates have ceased tapping, partially or altogether, and almost all are restricting their outputs, cutting down expenses drastically to average up profits a bit.

There is, however, a silver lining to every cloud, and the present totally unlooked for artificial crisis has caused all companies to think furiously, with the result that real efforts are now being made to produce better quality of rubber; and standardization will certainly come into being shortly. I know of several ways of vastly improving the quality of rubber and there is some small chance now that companies will take these methods up. Before, they were too “sombong” (a Malay term best translated as haughty and purse proud)

to look at anything but the most conservative rule of thumb methods. Now a little scientific knowledge is admitted to be of some possible use.

If the price rises to 3s. 6d. or more, which I anticipate for April next, then the 1,400,000 existing planted acres will be maintained, as it will become possible to finance even the weakest company; but if the price is manipulated down, then most certainly some 400,000 acres will give up rubber cultivation entirely, and there will be trouble in heaps ahead for the manufacturers in the future, as wild rubber will be ousted and the supply of plantation will be kept fairly short under the drastically economic methods necessary to secure a profit.

If the manufacturers will hold the market steady at the 3s. level for another year, then the future supply is assured practically forever, but if acrobatic feats are played with the financing of it this next year then there will be trouble aplenty.

A little forethought on the consumer's part now will permanently assure a free market with a steady, well-regulated supply, but any attempt to jockey the planting industry will result in the formation of a monopolistic production that will give points to an oyster for closeness.

At 2s. per pound the bulk of our rubber, being yet only in its first and second years of tapping, cannot be produced at a profit. Java and Sumatra companies talk loudly about cheap costs, but a careful examination of statistics doesn't seem to bear this out in most cases, somehow. The best English Sumatra estates, with very large areas, are showing good profits, largely due to good forward contracts, but the bulk of the 300,000 odd acres (220,000 being under other control) doesn't seem to pan out so well, due to administration, I presume, tho the poorer yields and the longer time required to reach maturity, as compared with the Straits, have a lot to do with it.

We in the Straits will soon be bringing our average cost of production, all in, down to 1s. 6d. all around, and by 1917 I expect it will average but little over 1s. for the whole country; as, if the price is raised next year and large areas are not allowed to go out of cultivation, practically the whole of our present planted areas, up to and including much of the 1912 planting—say nearly 700,000 acres—will be in full bearing, the bulk of the trees producing as much as they will ever be allowed to do in the future. Standardization of administration will also go a long way to bring this about.

I may say that before very long our rubber will be turned out just like Fine Hard Pará, only better. I am patenting a machine myself which will do this, and there are several others being worked out, too. The rubber will be smoke-cured direct from the latex in the form of thick sheets, which will not have suffered from any contact with machinery while in an immature form, and will be perfectly pure, containing just the proportion of water—or absence of it—that manufacturers require. They can have their rubber made to order, in fact, to suit their requirements.

By the way, may I be permitted to point out that a small error has crept into your calculations *re* the Japanese-planted areas and future yields here, in your August issue. The total area of land leased is 83,000 acres, but the planted area is only 15,000 acres. They do not seem to be doing any too well, owing to labor difficulties, and they don't seem to "savvy" as well as the Chinese owners. There is practically no Japanese labor on them, as they can't stand the climate. The Japanese coolies who have been taken to Brazil will probably die like flies, being quite unsuited to the climate and the work.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

INSCRIPTION SALES.

IN his recently published work "Factos Economicos" Dr. Miguel Calmon du Pin e Almeida, professor at the Bahia Polytechnic School, explains the manner of conducting "Inscription Sales." This system has been adopted in Antwerp with much advantage to the growers of rubber and to the commerce of the port.

When lots of rubber reach Antwerp a sworn broker, a man of perfect integrity and enjoying the confidence of the trade, examines the product minutely, then describing and valuing it. The valuation is in accordance with the general conditions of the world's production and consumption, the visible or estimated stocks and the demands or assumed requirements of buyers. The results of this estimate are embodied in a notice indicating: (1) Names of vessels. (2) Name of the Antwerp commission house for whose account the merchandize is to be sold. (3) Number of each lot. (4) Weight of the rubber offered for sale. (5) Estimate of price by the broker. (6) Summarized description of the product. (7) Date of sale by inscription.

The above notification, printed at least twenty days before the day of sale, is sent with samples to the large American, Russian, German and French buyers, so that they may have time to send in their buying orders.

On the day appointed all these buying orders are handed to the broker, closed and sealed. The opening of the bids commences at 10:30 a. m., and no bid can be accepted after that hour. As fast as the prices are announced they are written down upon a large printed form with about 15 columns. The first column on the left contains the lot numbers and the second the valuation by the broker, while each of the other columns has at its head the name of one of the houses bidding and in the lines below the prices offered for the respective lots. In this way the bids can be compared. The lots go to the higher bidder, unless the seller uses his right of withdrawal from sale.

At 12:30 p. m. there is a general meeting of the sellers and buyers, when the broker reads off the results of the bids entered upon the tabular sheet. When (as rarely happens) two buyers make identical bids the question is settled by one of them giving way, by dividing the lot, by drawing lots, or by giving the lot to the buyer willing to pay the highest price for it.

Bidders are bound to the prices offered by them even when theirs are the only offers and exceed the broker's estimates. The author adds:

"This system would be of advantage to our rubber producers as well as to our merchants. The rubber could leave Pará or Mañaos sold directly to the consumers by the *seringueros*, who might form a co-operative organization for that purpose, dispensing with onerous intermediaries."

A CONSULAR REPORT ON MALAY RUBBER CONDITIONS.

The United States consul general at Singapore, Mr. Edwin S. Cunningham, in a report which appeared in the Daily Consular Reports of December 12 last, has this paragraph on present rubber conditions in the Malay States:

"Within six months, the price of the best grade of plantation rubber, the second item of importance in the country's production, fell from \$102 to \$51 per 100 pounds, and lower qualities suffered more than a corresponding decline. A further decline has occurred since June 30 and every branch of business in this section is interested in the question whether still lower prices are to come. The results have been the introduction of more economical methods in the rubber industry and a decline in rubber shares, almost universally held and heretofore considered an excellent investment. Fortunately, tho the unexpected and abnormal depression has been severely felt, the country is too rich in resources to be seriously affected for a long period by a depreciation in the price of one article.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent

AS a rule, business in manufacturing lines may be stated as "so-so." While some houses report good trade, most of them at this writing are quieting down, or have already done so, for the Christmas and New Year holidays. Many of them, however, are quietly preparing for a speeding up soon after 1914 makes its appearance. The tire manufacturers, who have had a fine business for the greater part of the year, are restricting their product somewhat, but claim that their present output just about balances the day-by-day demand. That it should be better is the opinion of many, when the mild weather and the absence of snow in New England is taken into consideration, for many automobile owners are running their machines much later than usual.

The clothing men have had a good season, with plenty of orders on hand for early delivery. Mechanicals are not active. Druggists' goods makers have been busy. Judging by the great variety and immense stocks of rubber toys displayed in the department stores, the makers of these lines must also have had an excellent season.

The Boston Belting Co. makes an important change the first of the year. After doing their sales and shipping business at a downtown location for more than half a century, they are removing their general offices and warerooms to their factory in Roxbury. Several buildings connected with their manufacturing plant have been combined, remodeled and specially adapted to the growing needs of these departments, and it is claimed that with more room and better facilities the concern will be able to serve its patrons with greater promptness and satisfaction.

It sounds like a long way off to say their new wareroom location is in Roxbury, but it is really less than twenty minutes from Boston's business center or any of the stations of the tunnel or subway, so that, taking time into consideration, the new location is really nearer and more convenient than the old, for many of their customers. In the matter of shipping, the warerooms are much nearer the Ruggles street and the Boylston street freight yards of the N. Y., N. H. & H. railroad, which takes the lion's share of their shipments.

As was said above, this company has had downtown headquarters for many years, if not during the whole life of the company, since its establishment in 1828. A printed advertisement, framed and hung in Mr. Elder's office, shows that in 1855 the office was at the corner of Summer and Chauncy streets, and since then the company has occupied three locations on Devonshire street, the one now being vacated having been its headquarters for twenty-eight years.

But even now, downtown will not be entirely abandoned. An office will be maintained, for a time at least, at Room 602 Columbian National Fire Insurance Building, 77 Franklin street. This is mainly for the convenience of the city salesmen and an information point for out-of-town customers. The company is instructing its patrons to address all mail to Box B, Roxbury Crossing Station, Boston.

The great plant of the Apsley Rubber Co. at Hudson will soon be run by electricity and the present steam-driven machinery will be actuated by power brought many miles from another state for the purpose. Already the box factory, the clothing mill and the last making shop are supplied with such power, and gradually the heavy mills and calenders will be fitted with individual motors. Such a transformation of course is a matter of much detail, and must be gradual, if the regular work of the mill is to go on uninterruptedly, but before long the mill at Hudson will be run by the Con-

necticut River. The great electrical plant is situated at Brattleboro, Vermont, and the current conveyed by cables for many miles to the Apsley plant.

And in this connection it may be of interest to know that the Connecticut River Power Co. was developed largely through the exertions of the late Charles W. Dunham, at one time senior partner of Dunham Bros., who were for several years New England distributors of Mishawaka rubbers and wool boots. Mr. Dunham spent a large part of his time in overseeing the building of the big dam across the Connecticut at a point a little below Brattleboro. He died, however, before the enterprise was fully completed.

Colonel Frank L. Locke, for many years superintendent of the Boston Rubber Shoe Co.'s plants at Malden and Edgeworth, is gaining deserved popularity and winning encomiums for his most successful management of the Boston Young Men's Christian Union in this city. Colonel Locke succeeded the venerable William H. Baldwin, through whose exertions this institution became famous for its influence upon Boston's young men, and it is saying volumes to state that "Father Baldwin" had a worthy successor in Colonel Locke, who has the personal friendship of every frequenter of the pleasant reception rooms, the various classrooms, or the splendid gymnasium of the association. The Colonel is an easy and convincing speaker, and is particularly happy in introducing many noted lecturers who favor the association, and on frequent Sundays and on all holidays Colonel Locke is present at the rooms, holding a reception, superintending an entertainment or overseeing a holiday celebration or a warm weather outing.

James H. Stedman, who is treasurer of the Monaquot Rubber Works Co., of South Braintree, was recently honored by the governor, who appointed him a member of the Massachusetts Board of Prison Commissioners. The Boston Transcript mentions the nomination in the following editorial: "In the nominations today to the Board of Prison Commissioners and to the Board of Parole and Advisory Board of Pardons, Governor Foss lengthens the long list of excellent appointments which he has made during his three years on Beacon Hill. As a manufacturer Mr. Stedman will bring to the Board of Prison Commissioners experience and practical knowledge of a kind certain to prove useful in its deliberations."

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

IN spite of rumors of business depression from other parts of the country, and altho there has been the usual cessation of activities in Akron incident to this time of the year, business conditions here are most satisfactory and the city has every element necessary to its prosperity. The Akron Chamber of Commerce, organized for active service about five years ago, has devoted its energies to the upbuilding of the city from a civic standpoint, with the result that it has become a better place in which to live and has therefore been looked upon as an attractive industrial location; and the growth of the rubber industry has formed an important element in the city's prosperity.

* * *

The annual meeting of stockholders of the Goodyear Tire & Rubber Co., held on December 1, resulted in the re-election of the following officers: F. A. Seiberling, president; C. W. Seiberling, vice-president; G. M. Stadelman, secretary, and F. H. Adams, treasurer. A report read at that meeting showed a gross business done by the company for the year amounting to \$32,500,000, with net sales of \$29,000,000, at a profit of \$2,-

041,000. Of these earnings \$603,192 represents a 33 per cent. dividend paid for the year on common stock, a decided drop from the \$3,001,000 earnings on this stock for the year 1912, when the gross business of the company amounted to \$25,232,000—this drop being due in a great measure to the flood and strike of last spring.

A circular sent out by this company early in December announces that its heavy tourist inner tube will in the future be made 30 per cent. thicker than the ordinary tube, with the reinforced rim side 50 per cent. thicker than the balance of the tube, protecting it from rim dust and chafing, reducing pinching to a minimum and resulting in extra tube strength and extra mileage.

A "Safety First" battalion of 115 foremen has been organized at this company's factory, to patrol the premises constantly looking for anything which may be dangerous in operation and suggesting safety devices, also to instruct workmen. It is inevitable that among so many workmen as are required to operate a factory so extensive as the Goodyear, accidents will happen, and the aim is to reduce these to the smallest number possible, the safeguarding of the lives and well-being of its employees being held by the company—as stated in a recent address of President Seiberling—"as a high moral obligation."

* * *

Reports by the local tax board show an increase in the value of factories and equipment, notable among these gains being a 25 per cent. increase in the valuation of the property of the B. F. Goodrich Co. over last year's assessed value. The taxes paid by this company constitute one-fifth of the entire tax receipts for the city of Akron and cover almost one-eighth of the property located in Summit County.

* * *

Construction work is now under way on two additional wings to the factory of the Firestone Tire & Rubber Co., and these will probably be ready for occupancy early in the spring, when an extra floor will be utilized for office space. These new wings are of steel and concrete, with a facing of light brick, and are said to be absolutely fireproof.

* * *

The Loewenthal Co., the large scrap rubber concern, has secured the services of Mr. Leo Meyer in connection with its Akron office. Mr. Meyer has had considerable experience in this line and will constitute a valuable addition to the company's force. His time is to be devoted exclusively to keeping in close touch with the various factories in Akron and vicinity.

Fifteen checks were taken from the office of The Motz Tire & Rubber Co. on the night of December 19, by a burglar, who gained entrance to the office on the first floor by breaking a window in the rear of the building. Proceeding upstairs he made a thorough search of all the drawers on the floor, using a hatchet to chop open those that were locked. In the cashier's drawer he found the checks. When the members of the office force arrived in the morning the office floor was covered with burnt papers, the burglar having evidently not used the electric lights in the building, but had used matches and lighted papers to find his way about the office. It was evidently the work of an amateur. All of the banks in the city were notified of the robbery and payment stopped on the checks.

* * *

The Kelly-Springfield Tire & Rubber Co. anticipates reorganization, change of name and distribution of surplus, which matters will be taken up at the annual meeting December 26.

* * *

Certain stockholders of The Royal Rubber Co. have filed in the Common Pleas Court of Summit County at Akron, a pe-

tition declaring that the company is insolvent, owing fully \$50,000, and asking that agreements made by the officers of the company for the sale of the plant and real estate to The Dutch Rubber Co. be set aside and the property sold to meet liabilities. The plaintiffs are Alvin L. Neiswanger, C. R. Musser, Rocco Masino, and E. B. Foltz, who allege that they own 58 of the 1,561 shares of Royal Rubber Co. stock. Defendants named are the Royal Rubber Co., The Dutch Rubber Co., A. M. Stockwell of New York City and his attorney.

The petition also alleges that the Royal Rubber Co. was capitalized at \$200,000, divided into 2,000 shares of \$100 par value each, that the plant has been idle for a year and that the buildings are suffering injury through disuse; that no dividends were ever paid by the company, which authorized a \$100,000 bond issue, secured by mortgage on the real estate, and that \$90,000 of bonds have been issued. It is further claimed that contracts were entered into regarding the formation of a new company to be known as the Dutch Rubber Co., the transfer of certain shares of stock in this new concern, with the payment of a specified amount in cash, to be accepted by the Royal Rubber Co. in return for the title to its realty and assets; that only a part of the agreement regarding the organization was carried out, and that the deed to the real estate and plant of the Royal Rubber Co. conveyed by certain officers of the company had not been authorized by the Board of Directors. W. E. Pardee and J. A. H. Meyers were appointed receivers.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

THE rubber trade of Chicago, with its usual optimism, is looking forward to a prosperous New Year. But just what the new year will bring is problematical. That there is a general slackness of business at present in most branches of the trade cannot be gainsaid. Among Chicago men there seems to be a wide diversity of opinion as to the cause. Most dealers are agreed that there can be no change in legislation without a corresponding depression. Jobbers say that specifications for 1914 will be delayed as long as possible, or until there is more certainty as to the working out of the new legislation. The story of the trade during the past month has been, in a large number of lines, the story of the weather, and the weather has been more unfavorable to some lines of trade than for many years. For the past four weeks, when according to the almanac the mercury should be near the zero mark, with slush and snow on the ground, the weather has remained mild, with little rain and no snow. The rubber raincoat and the overshoe people have been brought to a state verging on despair.

* * *

W. E. Carver, of the Rubber Manufacturing & Distributing Co., 207 West Monroe street, said: "I have been in the rubber business for many years, but never have I seen such a season. With conditions at the beginning of the fall leading us all to think that we were going to have an excellent winter's trade, the weather has remained like summer for week after week, until here we are in what should be the middle of the winter, without any occasion to wear rubbers or overshoes, and indeed without enough bad weather in sight to warrant the retailers in putting in extra stocks. Yet apart from footwear and clothing the trade is fairly optimistic."

* * *

F. B. Henderson, of the Mechanical Rubber Co., said that the trade on all lines of mechanical goods had improved in a marked degree during the past month and that he did not look for a slump either after the first of the year or at any time during the next twelve months.

The Gutta Percha & Rubber Co. reported that business was good and that they expected it to remain good. They have recently received several fine orders for belting from large contracting firms building grain elevators in the west and report that they expect more building of mills and elevators in that section the coming spring than for many years. This company makes a specialty of furnishing combination rubber belting for grain elevators and flour mills.

The rubber belting business generally has been suffering from labor troubles at the copper mines in Michigan and in Mexico. Chicago firms have in the past had an excellent trade in these sections, but have abandoned these fields for the present, until the trouble is permanently adjusted. Of course the trouble in Mexico is not labor, strictly speaking, but the conditions in that country are so chaotic owing to the civil wars that not enough labor can be secured to operate the mines. In Michigan the trouble between the guards and the strikers continues to make the working of the mines impossible. Many thousands of dollars worth of belting has been bought by the mines in these regions every year, and Chicago, owing to her advantageous commercial position, has secured most of the orders for large shipments.

There is one branch of the trade that has not suffered any depression—and that is tires. Following the announcement in November by the B. F. Goodrich Co. of a reduction averaging about 15 per cent. in the price of their tires, the Chicago branches of this company became centers of great activity. Other companies soon followed in the price reduction. Another feature that has tended to increase the sale of tires has been the abnormally open winter that has been enjoyed in this part of the west, making it not only possible but agreeable to use automobiles long after they would normally be put away for the winter.

The W. D. Allen Manufacturing Co., the enterprising brass manufacturers of this city, have just purchased the patterns, tools, stock and good will of the lawn sprinkler business of the Hotchkiss-Peck Mfg. Co., of Bridgeport, and are now the only manufacturers of the full line of lawn sprinklers in the United States. They make over fifty-seven varieties, thus giving the jobber an opportunity if he so elects to buy his entire line from one factory. Some of the goods formerly made by the Bridgeport concern will be perpetuated by the Allen company, which will continue to make the Eureka, Universal and Newport sprinklers.

Among the new goods being brought out by the Allen company might be mentioned the U. S. A. nozzle, the operation

in cut No. 1, while a further pressure develops a straight stream, as shown in cut No. 2, and a variety of sprays and streams can be obtained by varying the pressure.

Another new article which this company has recently brought out is a steel clamp, shown in cut No. 3. The company carries a full line of samples—both at its Chicago headquarters at 133 West Lake street and also at its New York branch at 69 Warren street.

* * *

The Fiberoid Rubber Co. is putting out a new rubber mat in lots of 500, at \$20 per hundred. They are so constructed that they can be rolled up and sent by mail as premiums. The company has received orders for several thousand.

* * *

Mr. Curwen, Chicago manager of the Boston Belting Co., returned from a trip in Wisconsin about the middle of December. He found the paper milling men quite optimistic, for all mills were running. Hence the outlook for the New Year, in the belting line at least, looks promising.

* * *

Mr. S. F. Denny, the western sales manager for the Home Rubber Co., recently returned from a trip through the west and southwest, and reported prospects for 1914 in these sections of the country, especially in the mechanical line, to be quite favorable.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

THE rubber manufacturers throughout Rhode Island are closing the season with satisfaction and are especially optimistic regarding the coming year. Practically all of the plants are preparing for a greater business year than the one just closing, tho 1913 is acknowledged to have been generally prosperous. Prices, apart from tires, have held firm through the entire twelve months, and as a whole the factories are returning good profits. Most of the plants throughout the State are running over time, or with two shifts in different departments, and there is said to be enough work on hand to warrant the starting of additional departments on the two-shift basis.

* * *

Much interest was manifested in the pledgee's sale of a large amount of the stock of the Walpole Rubber Co. in this city on December 15, which had been held as collateral by the defunct Atlantic National Bank as security on notes. This stock was given to the bank as collateral for loans, and when the notes came due and were not paid the stock was placed at auction by Receiver Curtis of the bank. The common stock, of which 691 shares were disposed of—which sold eight months ago for \$65 a share and which is supposed to have a par value of \$100—brought less than half a cent a share. Seven blocks of the preferred stock of the company were sold for a total of \$5,405. One block of 500 shares of preferred Walpole stock was continued to a later date and the same disposition was made of 1,300 shares of common stock of the same concern. The highest price paid was \$2,250 for 150 shares of Walpole preferred, purchased by Ernest W. Tinkham. Louie D. Pierce paid \$1 for one lot of 293 shares of Walpole common. Michael J. Houlihan, vice-president of the Walpole Tire & Rubber Co., without any opposition, bought 250 shares, with a par value of \$25,000, for \$1, and Percy W. Gardner, attorney for Receiver Curtis was the purchaser of several blocks of the preferred stock.

Notwithstanding the burden of expense imposed upon the stock of the Walpole Tire & Rubber Co. by the present receivership, the stockholders' committee declares that the corporation is making big money and the stockholders are urged to retain their stock pending the outcome of plans

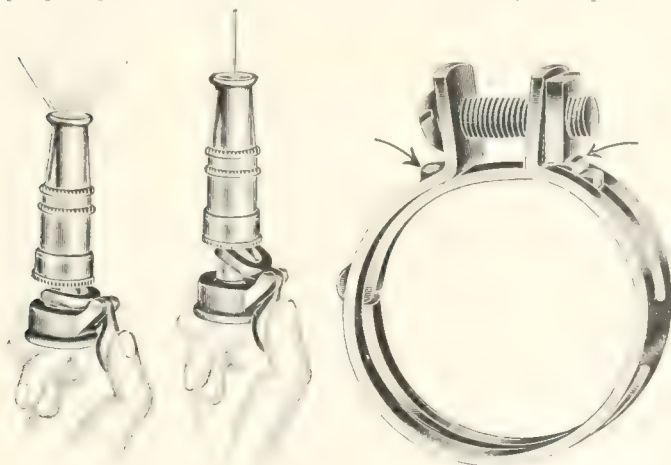


FIG. 1.
SPRAY.

FIG. 2.
STRAIGHT STREAM.

FIG. 3.
STEEL CLAMP.

of which is shown in the two accompanying cuts. A slight pressure on the thumb piece produces a fine spray, as shown

for a reorganization. According to this committee, the net earnings of the Walpole concern for the three months, August to October, were approximately \$20,000 per month, or at the rate of \$240,000 per year. This income, reached after charging off \$15,000 for interest charges and \$32,000 for depreciation, the committee declares is ample to pay seven per cent. on all present outstanding preferred and common stock.

* * *

The announcement has been made that the Universal Winding Co. is soon to move its plant from 99 Stewart street, this city, to the city of Cranston, where an exemption from taxation for ten years has been voted. The concern has just purchased property on the banks of the Pawtuxet river comprising about twelve acres, with 21 buildings, all of modern construction. The new plant is considerably larger than the present one and will allow of a general expansion in all departments. The firm now employs upwards of 400 hands and it is expected that this number will be increased to 750 in a short time after the company is settled in its new location.

* * *

Surveys of the grounds at the factory of the Consumers' Rubber Co. at Wood Street, Bristol, were recently made by parties from Boston and Pittsfield, Massachusetts, who are seeking a new rubber mill site. No definite information could be obtained from any of the parties concerned.

On December 18 a dividend of 30 per cent. was declared by the referee in bankruptcy and this is being distributed among the creditors of the concern. It is expected that another dividend will be declared in the near future.

* * *

Extensive changes are being made in the office arrangements at the plant of the Davol Rubber Co., Point street, Providence. The new offices are to be located on the second floor of the old building, directly over the present office. There will be several rooms in the new suite and all will be handsomely finished in paneling in natural woods.

* * *

A cylindrical tank, eight feet in diameter and weighing 15 tons, which is to be used in connection with the new method of vulcanizing the product of the factory of the National India Rubber Co., at Bristol, and which came from Buffalo, N. Y., was placed in position early in the month.

The plant of this company closed on December 24 for the regular annual inventory of stock and will reopen January 5.

Arthur H. Emerson, secretary-treasurer of the National India Rubber Co., of Bristol, was married to Miss Adele Deming, of Chicago, at St. Paul's Episcopal church, on November 18. The brother of the bridegroom, Robert S. Emerson, who is receiver of the Consumers' Rubber Co., of Bristol, was best man. A reception followed at the home of the bride's mother. Mr. and Mrs. Emerson, on their return from an extended wedding trip, will take up their home on High street, Bristol.

C. A. Ostby, for several years draughtsman at the factory of the National company, has been recently promoted to the position of master mechanic, succeeding Oliver H. Blaisdell, who has been master mechanic and chief engineer for 28 years. Mr. Blaisdell will continue in the capacity of consulting engineer, while Frederick G. Blaisdell becomes the chief engineer.

The Cataract Rubber Co., of Wooster, Ohio, announces the appointment of H. C. Gentry as special factory representative, with headquarters in New York, at 1608 Broadway, from which location the Cataract tire is distributed by Meyers & Grayson, representatives for New York City.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

THERE is some difference of opinion concerning the general business situation. Collections are rather slow, and this is traceable directly to the financial disturbance throughout the entire country. But there has been too much prosperity in this state to permit anything like that to hold business back to any considerable extent. The production of fruit, minerals and oil last year was exceptional, and these are the things on which the state depends for its general prosperity.

Some of those who follow the rubber business take the attitude that it will require more than general prosperity to specifically improve this industry. One reason advanced is that in the first place there are so many firms here to divide up the business that it would be practically impossible for any one rubber establishment to enjoy a great increase of trade. Another reason is that until there are many more factories in the state there can be no large market for mechanical rubber goods. This is in no sense a manufacturing state, altho people who study conditions say that within five years great factories will be established, and that cheap labor, augmented by cheap electric power in unlimited abundance, will enable the state successfully to compete with any other in the Union in respect to manufactures.

It is apparent that the days of the independent jobbing house for the handling of rubber lines in San Francisco are numbered. Perhaps this is true everywhere, but it is certain that the great firms which manufacture have made up their minds to handle their business on this coast direct from the factory. This results in forcing the jobbers out. It is also being followed by a consequence which the big firms did not anticipate, and that is: The local jobber has an established trade along certain lines, and rather than lose that trade he has in some instances started into the manufacture of those particular articles himself; and with the strong asset to commence with that he already has the customers, he can come very near holding them, because it appears that even under present conditions a local factory, however small, can specialize and nearly, if not quite, meet the prices of the big houses. In other words, the consolidation of the big factories and their direct representation is resulting in the springing up of small factories which take the place formerly occupied by the jobbing houses.

A hornet's nest has been stirred up in Oakland, owing to difficulties arising from a bid to the city for fire hose. It seems that the bid made by the B. F. Goodrich Co. was 71 cents, and of the American Rubber Co. and the Bowers Rubber Works 75 and 76 cents, respectively. The fire chief recommended that the contract be let either to the Bowers or the American company. Both of these are local concerns having local factories, and the B. F. Goodrich Co. filed a strong protest, claiming that their bid, altho lower and for exactly the same kind of hose, had been completely ironoged. But the city council has voted to uphold the fire chief's recommendation, and the courts may be resorted to before the matter is finally settled.

* * *

The western branch houses of the B. F. Goodrich Co. and the Diamond Rubber Co. are now located together under one roof in the big building at the corner of Fremont and Mission streets. Both of these companies have a large number of branch stores throughout the entire coast, and these will be consolidated, and it can be readily seen what a saving in expense this will mean, with practically the same convenience to the automobile owner, and a benefit by way

of reduced prices. It is estimated that the companies will effect a 20 per cent. saving in expense. Harry Miller will continue as Pacific Coast manager for the B. I. Goodrich Co. and C. E. Cook will act as Pacific Coast manager of the company's mechanical rubber goods department, while C. E. Mathewson will continue as Pacific Coast manager for the Diamond Rubber Co., having charge of both the tire and mechanical lines.

* * *

The Firestone Tire & Rubber Co. has opened a direct factory branch in Oakland, the city just across the bay from San Francisco. In order to provide suitable accommodations the store formerly occupied by Holmes & Olson at Twelfth and Jackson streets has been taken over, improvements have been made in the building and a complete equipment is being installed, which will enable the firm to duplicate the excellent service afforded by the San Francisco branch. Mr. W. H. Bell, the San Francisco manager, says that it is the company's intention to give just as good service on the Pacific Coast as is given to automobilists and truck owners on the Atlantic Coast by this company. The manager of the new branch is H. E. Esterly, who has been connected with the San Francisco branch during the past year. He has been with the company since its organization and has held positions at St. Louis, Chicago and New York.

* * *

Waketeld Baker, head of the firm of Baker & Hamilton, and a millionaire, dropped dead one evening last week of heart failure. He was 47 years of age and is survived by a widow and three children. His firm recently entered the automobile tire business, having taken the agency for Savage tires.

* * *

Harry Kenyon, general manager of the C. Kenyon Co., clothing manufacturers, is now visiting on the coast, and he is accompanied by Max Magnus, the Chicago manager.

THE RESULT OF MR. TUCKER'S PRIZE OFFER.

In the December number of THE INDIA RUBBER WORLD, Mr. Quincy Tucker, of Boston, offered two prizes—one of \$5 for the best description of Wickham-smoked sheet and Da Costa-smoked sheet in contrast with the superficially smoked sheet coming from the East, and a second prize of \$2 for the best article on immature or weak plantation rubber—neither article to exceed 250 words. Mr. Tucker writes that there was no winner of the first prize, but that the second prize was taken by Mr. George B. Bradshaw, manager of the Bradshaw Rubber Co., Roselle Park, N. J. Here is Mr. Bradshaw's paragraph on immature plantation rubber:

"The properly smoked sheet from mature trees can be immediately distinguished by the tear. No matter in what direction torn, the edge will be ragged and will display stringers as it is being torn. This property persists throughout the making up of smoked sheet into goods and shows up in the finished article if it has high enough percentage of rubber. Only smoked sheet displaying a ragged tear is fit for high class goods and for rubber cement."

Mr. Tucker adds his own description of the Wickham and Da Costa smoked sheet rubber, which is here reproduced:

"Wickham-smoked cured rubber is intended to imitate the Brazilian method of film after film of smoked rubber, but mechanically smoked in a hollow revolving cylinder (or modified apparatus). Da Costa-smoked rubber is coagulated by forcing smoke into a large receptacle of latex by the aid of a steam jet, whereupon in about twenty minutes a large clot of spongy rubber is formed. To make any rubber into sheet form it is then necessary to put it through rollers revolving at the same speed. The present day Plantation smoked sheet is coagulated with acetic acid first, and having been made into sheet form as previously described, it is superficially smoked."

AUTO SHOWS AND THE TIRE MAKERS.

AS the time for the annual automobile shows draws near (the New York show being held in the Grand Central Palace from January 3-10, and the Chicago show in the Coliseum and Armory from January 24-31), the trade is wondering what effect the withdrawal of a number of the more prominent tire manufacturers will have on future exhibits. Manufacturers claim that returns are not commensurate with the expenditure necessary for obtaining suitable floor space, for shipping exhibits, etc., and for all the incidentals that usually accompany such an enterprise.

The highest price for floor space at the New York show is \$1.50 per square foot, and at the Chicago show \$1.25 per square foot. Tire exhibitors seldom have more than 200 square feet, so that this item of expense is generally kept well within \$300. In most cases the business done pays for the floor space and shipping expenses many times over, so that there must be another reason for this general withdrawal.

As a matter of fact the actual cost of making the exhibit is not even a small part of the total expense that is often incurred by many exhibitors during the time of the show. A very large item of expense is the great amount of advertising space taken in local newspapers and in magazines, besides the enormous amount of advertising matter wastefully distributed to souvenir seekers and catalog collectors. The seat of the trouble, however, cannot be laid at the door of advertising—if this department is conducted properly.

But probably the chief cause of the withdrawal of so many former tire exhibitors is the great expense involved in having so large a part of the sales force in the exhibition city during the time covered by the show and the necessary preparations, with all the incidental entertainment—the banquets, dinners and parties that seem an inevitable accompaniment of these gatherings, and which when conducted with a free hand reach in the aggregate very large sums.

Among the tire manufacturing concerns which will not exhibit at the National Automobile Shows this year are the Goodyear, Goodrich, Diamond, Swinehart, Firestone, Fisk, Kelly-Springfield, Ajax-Grieb, Federal, United States, Michelin and the Knight Tire & Rubber Co. The present withdrawal of these tire interests follows that of the motor truck manufacturers, and the results will be closely watched. If no falling off in business results from this move, it is safe to predict that the automobile shows will have fewer tire and rubber exhibitors in the future, and this will mean a saving of many thousands of dollars to the manufacturers.

Notwithstanding the withdrawal of the tire companies mentioned above, a number of companies will exhibit in one or both of these shows. They are as follows: Braender Rubber & Tire Co., Cataract Rubber Co., Columb Tires Import Co., Dayton Rubber Manufacturing Co., Double Fabric Tire Co., Empire Rubber & Tire Co., Miller Rubber Co., McGraw Tire & Rubber Co., Newmastic Co., Overman Tire Co., Pennsylvania Rubber Co., and Thermoid Rubber Co. In addition there are a number of rubber companies making certain auto accessories that also intend to exhibit, as given below: Asbestos & Rubber Works of America, F. S. Carr Co., Essex Rubber Co., Howe Rubber Co., L. J. Mutty Co., National India Rubber Co., Standard Woven Fabric Co., United & Globe Rubber Manufacturing Cos., and the Voorhees Rubber Manufacturing Co.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

CONGRESSMAN LINDQUIST'S REMARKABLE BILL.

THERE have been at one time or another a great many extraordinary bills introduced into the House of Representatives, but few of them have ever surpassed in remarkable features the bill known as "H. R. 10080," introduced into the House on December 8 last by Representative F. O. Lindquist, of Michigan. The bill is described as follows: "A bill providing for the labeling, marking and tagging of all fabrics, leather and rubber goods, as hereinafter designated, and providing for the fumigation of same. To be enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that it shall be unlawful for any person to misrepresent in manufacturing, selling, trading or exchanging within any territory or the District of Columbia any fabric or article hereinafter named of wool, cotton, silk, linen, fibre, leather or rubber, in whole or in part, which is misbranded within the meaning of this act, to wit: Men's, women's and children's clothing . . . boots, shoes, sandals . . . and all articles of rubber footwear; and any person who shall violate any of the provisions of this section shall be guilty of a misdemeanor, and for the first offense shall, upon conviction thereof, be fined not to exceed \$2,000, or shall be sentenced to one year's imprisonment, or both such fine and imprisonment, in the discretion of the court; and for such subsequent conviction thereof shall be fined not to exceed \$5,000, or sentenced to one year's imprisonment, or both such fine and imprisonment, in the discretion of the court." The bill then goes on to require "that all articles composed wholly of unadulterated rubber shall be marked, tagged or labeled in plain letters 'unadulterated rubber'; and that all articles composed in part of unadulterated rubber and in part of adulterated rubber, or such other vegetable, animal or mineral substances shall be marked, tagged or labeled in plain letters 'adulterated' or 'substituted rubber,' and the mark, tag, or label shall show all the constituents contained therein: *Provided*, That it shall not be required to separately mark, tag, or label any textile fabric used in the manufacture of the shoe, and that in all articles or fabrics composed in part of pure wool and shoddy the percentage of these constituents need not be stated."

Perhaps the features incorporated in Mr. Lindquist's bill, remarkable as they are, are not so interesting as the address he delivered in support of his measure. A verbatim report of his speech contains the following paragraph:

"You will also note that my bill includes rubber footwear. I think that it is extremely important that the manufacturers of rubbers should place a label upon their products, because the greater percentage of rubber shoes that are manufactured today are made from old adulterated, cast-off rubbers that are picked up in the alleys back of hospitals and pest houses, and find their way back to the manufacturer, and again are remelted and re-manufactured, and again sold over the counter to the consuming public under the pretense of their being made from genuine new rubber."

Just why there should be a great accumulation of cast-off rubbers back of hospitals and pest houses is not quite clear. The natural inference must be that all those unfortunate people who are taken to hospitals and pest houses enter not only wearing a pair of rubbers, but carrying several extra pairs with them, all of which are forthwith hurled from the back windows into the waiting alley. Possibly this is the custom at these institutions, but if so the Congressman is the first to discover it. He goes on further to dilate on the poor quality of modern rubber footwear. The stenographer reports him as follows:

"It is hardly possible for me to purchase a pair of rubbers for my little girl or boy that will give service for more than a couple of weeks before they are worn through. This, I am sure, is due entirely to the fact that the product from which the rubbers are made has been previously gone through the course of manufacture time and time again. I remember well when I was

a small boy, my parents bought me one pair of rubbers in the fall, and they would invariably last through the winter. It seems almost impossible today to purchase a pair of rubbers for my children of the same wearing quality that my parents bought me thirty years ago. Now, then, if the truth was known, there are perhaps millions of cases of sickness prevailing which I have no doubt could be traced back to the very manufacturer who is unscrupulously misrepresenting his rubber goods."

It is a somewhat prevalent habit to berate all things modern as compared with the products of an earlier generation, but as a matter of fact, the rubber footwear of today is quite the equal of the rubber footwear of thirty years ago, as there were more companies and keener competition in this line at that time than is the case today, to say nothing of the improved methods which obtain today in footwear factories, and the better prices that the manufacturers are receiving. The legislator's statement that "if the truth was known, perhaps millions of cases of sickness could be traced back" to the maker of rubber boots and shoes, is highly interesting, and Congress should be called upon at once to make an adequate appropriation and appoint the necessary committees to trace back these "millions of cases." This is certainly vastly more important than the tariff or the currency or any other merely commercial question that has yet come before that learned body of men. The congressman's whole speech in advocacy of his measure was interesting, but there is space here only to quote one other little clause in which he describes what a second is. "A second," he says, "is an article which has been damaged or mutilated in some way or other in the course of construction, and before it is permitted to be placed on sale it has been mended in such a way as to deceive the public."

Now manufacturers who make shoes of anything except pure rubber will be liable to a fine not to exceed \$5,000, or a sentence to one year's imprisonment, or both, unless they label such shoes "adulterated" and give on the label or tag a list of all the "adulterants," such as litharge, sulphur, carbon black, whiting or other ingredients.

What will the manufacturers do about it? This reminds the writer of the time when a certain well-known rubber manufacturer in Connecticut had a contract to supply ponchos to the United States Government. After the award of the contract, and after some goods had been delivered, the inspectors refused to receive the goods, claiming that the waterproofing material should be composed of at least 75 per cent. pure rubber. The manufacturer asked where the ponchos were going. Some were for the Philippines and others for Alaska, tho most were for army posts in this country. The manufacturer said: "If these were made of 75 per cent. pure rubber, you would have to send four men to hold the corners of each poncho sent to Alaska, so it wouldn't break in pieces like glass. And in the Philippines four men would be needed to hold each poncho flat and separate, for if laid one on another they would melt and stick in one solid mass. The inspector finally passed the ponchos without ascertaining what percentage of "pure rubber" they contained.

Mr. Lindquist probably does not know of the early experiments in making all rubber footwear in a Boston factory, rubbers which ran like molasses in summer and were as brittle as glass bottles in winter. He still sighs for pure, unadulterated rubber as the sole ingredient, but he doesn't know how lucky he is to get overshoes which are only partly made of rubber.

But rubber footwear producers may well keep an eye on this Pure Shoe bill, and at least inform their Congressmen of the foolishness of such a law.

The Bowling League of the Mechanical Rubber Co., of Cleveland, Ohio, consists of eight teams, made up from the various departments. According to the printed schedule for the season 1913-14, about eight matches a month are played off. The committee is composed of R. Beynon, W. Denker, F. Densler, H. J. Kappler, D. Jones and J. H. Pettersson.

THE REMODELED STOUGHTON PLANT.

THE recent additions to the manufacturing plant of the Stoughton Rubber Co., the rearrangement of its work, and the relocation of the various departments have made this one of the finest establishments of its kind in the country.



PHOTOGRAPHIC VIEW OF PRESENT FACTORY.

The picture showing the entire group of buildings is a novelty in its way. Usually illustrations of this sort—called birds-eye views—are carefully worked out drawings made from plans and photographs of the buildings taken from the ground or from buildings opposite. This, however, is not the case with this picture.



A GLIMPSE OF THE DRAFTING AND CUTTING DEPARTMENT.

one on the left is 150 x 50 feet, and three stories high, of concrete fireproof construction, with fire walls separating its different sections. This building contains the offices and bookkeeping department, the receiving and shipping rooms, and the inspection department. All goods and supplies are delivered at the rear, where an outside elevator takes them to the receiving room at the top of the building. Here, with a fine north light, the fabrics used are carefully inspected and picked, and afterwards shrunk and finished for the calenders and spreading machines. All goods in the entire factory go forward from one process to another, with no backward step. From the inspec-

tion room the fabrics go across the bridge to the other new building shown in the foreground of the picture. This new part is 175 x 45 feet, and joins the older structure, making a total length of 225 feet.

The cloth is here cut for the weather coat department, the cutting being done by electric knives. Each coat has a tag, each section of which bears the number of the garment. A coupon is taken from this tag by every operator who does any portion of the work, and these coupons are turned in by the employee for his pay. Here the trimmings for each coat are placed with the cut cloth, being then sent down one story to the making department, where the several operations by hand or machine are done; the garment next goes to the ground floor where, after being finished, it is inspected and then turned over to the shipping department. It is claimed for this company that it has a larger amount of floor space devoted exclusively to cravenetted coats for men than any other factory in the world.

The old establishment had three old chimneys, but these have been replaced by a fine stack of Custodis brick 125 feet high, a landmark for the vicinity. A rear building is devoted to the manufacture of rubber-coated slip-ons. Another contains the calenders and grinders, while the building shown directly in the rear of the chimney is the spreading department, separated by a bridge from the other workshops of the establishment.



A SECTION OF HAND TAILORING DEPARTMENT.

They have recently added a new power plant, resetting the old boilers and installing new ones, and have put in Rice & Sargent 400 H. P. equipment, doing away with the old direct-gear drive and replacing it with a modern Morse Silent-drive for the main line of shafting for mills and calenders. Both the boiler and engine rooms have been enlarged to accommodate this new equipment, which constitutes the latest variety of power plant.

As has been said above, the company devotes itself exclusively to the manufacture of men's and boys' rain coats and weather coats of cravenetted, gaberdine, worsted and woolen fabrics and rubber coats. Its product goes to every part of this country and also to the export trade. Some idea of the details of this "day-light factory" may be formed by a study of the photographs here shown of its various departments.

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A VIEW SHOWING SECTIONS TABLES.



GENERAL VIEW OF A ROOM DEVOTED TO "CRAVENETTE" RAIN COATS.



FINISHING DEPARTMENT.

Obituary Record.

GEORGE H. HOOD.

GEORGE H. HOOD, who for nearly forty years was a leading name in American rubber manufacture, died at his home in Hamilton, Massachusetts, on December 3, in his seventy-ninth year.

Mr. Hood might be classed among the pioneers of the American rubber trade. When as a young man just reaching his majority he entered the rubber business, in the 50's, Charles Goodyear was not only alive but was still extremely active in the development of the possibilities of rubber. Soon after the close of the civil war Mr. Hood embarked on an independent rubber business, in which he continued until 1870, when he joined with the late Robert D. Evans in the formation of the Eagle Rubber Co., of which he was general manager. Three years later the American Rubber Co. was formed as a Boston distributing agency for the product of the Eagle company and also for handling the footwear of the Meyer Rubber Co., of New Brunswick, New Jersey. Shortly afterwards the American Rubber Co. became a manufacturing concern and built a large plant for making footwear and clothing in Cambridge, Mr. Hood still being associated with Mr. Evans in this venture.

In 1878 Mr. Hood founded a rubber manufacturing company of his own in Chelsea, Massachusetts, calling it the Boston Rubber Co. He devoted his energies to the manufacture of wringer rolls, molded goods and rubber-surface cloths. Ten years later he bought a factory at Franklin, Massachusetts, and began the manufacture of rubber footwear, giving his product the name of the "Bell" brand. He was a man of initiative and of many original ideas, and embarked on quite a campaign of rubber footwear advertising in publications of national circulation. This proved to be a profitable course and he soon built up a considerable footwear business. In 1892 he sold his entire interests to the United States Rubber Co., becoming one of the directors of that corporation, but four years later he retired from this connection and was not after that actively engaged in rubber enterprises. But his strong personality had stamped itself so deeply upon the rubber trade that notwithstanding his retirement so many years ago from active work, he is still remembered by all except the very youngest members of the trade as a forceful factor in this industry.

Not all of his energy, however, was absorbed by his interest in rubber manufacture. He was one of the organizers of the Rubber Mutual Insurance Co., a director in the old National Hamilton Bank of Chelsea, and also in traction, light and power companies. After retiring from the United States Rubber Co. he devoted much of his time to travel in foreign countries,

and being a very keen and intelligent observer he acquired a vast fund of general information, which made his conversation most instructive and interesting.

His wife died last March, at Palm Beach, Florida, but he is survived by three sons—Frederick C., Arthur N. and Richard P. Hood—all connected with the Hood Rubber Co. and by two daughters Mrs. R. L. Whitman and Miss Helen Hood.

ALBERT T. MORSE.

With the passing of Albert T. Morse, who died in New York, December 10, the crude rubber trade will miss one who for many years held a leading place. Coming from Worcester, Massachusetts, in 1877, he, with his brother, Charles A. Morse, joined the staff of Earl Brothers in New York. He developed rapidly as a salesman, and in 1894 began independent operations under his own name.

His sterling worth, his probity and his exactness in his business relations won for him many friends, and his marked success—and that of A. T. Morse & Co., when Charles A. entered the firm—was the logical outcome of his ability and popularity, and a source of pardonable pride to both of the brothers.

Mr. Morse saw the rise and success of many rubber manufacturing companies and the fall of some, and his advice, often sought, was always in the interest of conservative measures and methods.

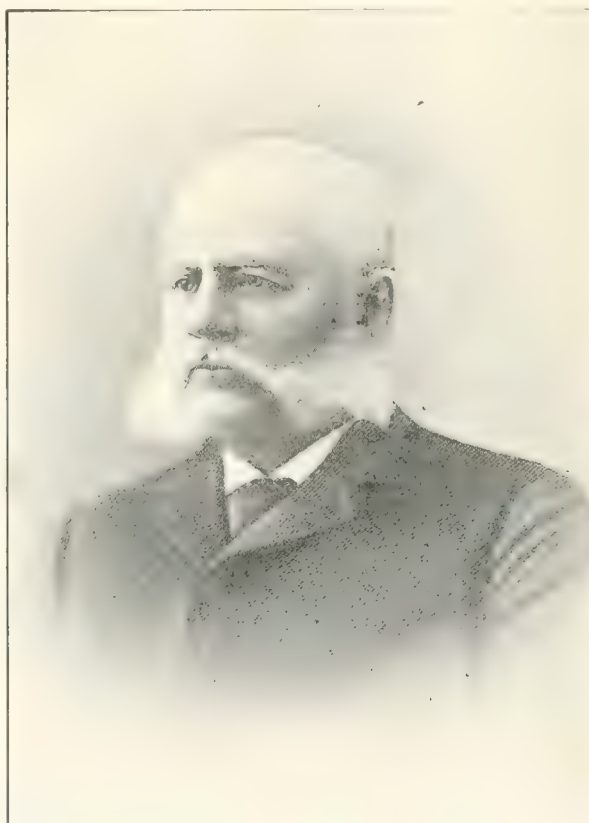
He had many intimates among the leaders of the older generation of rubber men, including E. C. Converse, R. D. Evans, Amaza Spadone, George A. Alden, and men of that type; and many of the most active crude rubber men of the present generation received from him valuable instruction in the science of purchasing crude

rubber. He withdrew from active work in 1911 but still retained an interest in the firm of Meyer & Brown.

BENJAMIN F. VITT

Benjamin Franklin Vitt, for many years connected with various rubber importing and manufacturing concerns, died at his home in Woodhaven, Long Island, on December 12. Mr. Vitt began his career with the importing house of Jules S. Abecasis, which was an important factor in the rubber trade for many years. He was with the New York Commercial Co. for about 15 years and with the Diamond Rubber Co. for about 5 years. After the amalgamation of the Diamond and Goodrich companies he became connected with the rubber importing house of Ed Maurer, retiring from active work about two years ago on account of failing health.

New York's motor fire apparatus is valued at \$1,000,000 and includes 122 pieces.



GEORGE H. HOOD.

News of the American Rubber Trade.

THE INDIA RUBBER WORLD'S NEW OFFICES.

WITH the opening of the New Year, THE INDIA RUBBER WORLD is established in its new office at 25 West Forty-fifth street. The reason of this change was the necessity for more room, a necessity occasioned not only by the growth of THE INDIA RUBBER WORLD, but by the increasing number of books issued by The India Rubber Publishing Co.

THE RUBBER CLUB'S FIFTEENTH ANNUAL DINNER.

The Rubber Club of America will hold its fifteenth annual dinner at the Waldorf-Astoria in New York on Tuesday, January 6 next, at seven o'clock. There will be a number of interesting speeches, two well-known speakers who are to be present on that occasion being former Congressman Martin W. Littleton, of New York, and Justice Almot F. Jenks, of the New York State Supreme Court; and in addition to the speaking there will be a number of special original features.

The members with their guests will be seated at round tables accommodating eight or ten people, so that those who wish to sit together in parties can do so by communicating with the secretary, Mr. H. S. Vorhis, 314 Fourth avenue, New York. The dinner committee consists of: Charles A. Coe, chairman; William E. Barker, Robert L. Rice, Robert B. Baird, and Theodore W. Bassett.

PORTAGE RUBBER CO. MEETINGS.

At a special meeting of the board of directors of The Portage Rubber Co., held December 19, a resolution was passed authorizing the payment of a regular quarterly dividend of $1\frac{3}{4}$ per cent. on preferred stock of record on December 1. It was also decided to erect an addition to the plant at Barberton, at a cost of about \$25,000. The annual meeting of stockholders is to be held on January 19, and at that time the stockholders will be asked to vote on a proposition for a \$250,000 increase of capital stock. Officers of the company report excellent prospects for the year 1914.

THE MULCONROY COMPANY OPENS AN OFFICE IN NEW YORK.

On January 1, the Mulconroy Co., of Philadelphia, manufacturers of belting, packing, hose and general mechanical rubber goods, opened a store in New York at 150-152 Chambers street. This new store will be in charge of Mr. R. L. Reed, who has had over ten years' experience in handling general mechanical rubber goods, and is therefore very familiar with this line of goods, as well as with the mechanical trade.

SOMETHING NEW IN ADVERTISING.

The December number of THE INDIA RUBBER WORLD contained a paragraph about the completion of the new factory of the Dominion Tire Co., Limited, of Berlin, Ontario, and in an earlier number of this publication there appeared an illustrated description of this very fine plant in which "Dominion" tires, plain or nobby, are now being made. A recent issue of the "Montreal Herald," had a four column article regarding this company and its new factory, not only illustrating the factory and the tire, but giving pictures of the directors of the company, including three Americans: Col. S. P. Colt, Mr. H. E. Sawyer and Mr. E. S. Williams.

But from an advertising standpoint, perhaps the most interesting exploit of this company—with which Mr. Ralph W. Ashcroft, the advertising manager, is to be credited—was the extending early in December of the following invitation to some 50,000 users of tires to send in their name and address and the date of their birth. Here is their invitation:

"The directors of the Dominion Tire Company, Limited, Canadian Consolidated Rubber Company, Limited, selling agents, wish to celebrate the birth of their new million dollar factory, at Berlin, Ontario, by presenting you, express prepaid, with a 'Dominion' tire, plain or nobby tread, for your car, should your birthday anniversary occur on the same date as that of a plurality of those motor car owners who return enclosed card. R. S. V. P."

It is easy to see under the general law of averages that everyone who accepted this invitation and sent in a card, stood just one chance in 365 of getting a free tire—a chance well worth taking, considering the only expense involved was a 2-cent stamp. Incidentally, these cards give the company's advertising department accurate information as to the date on which the birthday of 50,000 car users falls and it may safely be assumed that they will utilize this information to send friendly greetings on these anniversary days. This is certainly very new in advertising and very clever.

DETROIT FACTORY BRANCH FOR MECHANICAL RUBBER CO.

The Mechanical Rubber Co., of Cleveland, Ohio, has opened a factory branch at 228 Jefferson avenue, East, Detroit, Michigan. The new plant contains between 15,000 and 20,000 square feet of floor space, and by January 1 a complete stock of mechanical rubber goods will be installed. The present selling force in that territory will be maintained and added to. The Ohio Rubber Co., which has been identified with the Cleveland factory in the sale of its product through Ohio, Kentucky and Tennessee, will occupy a part of the building, carrying a complete line of waterproof clothing and automobile tires and accessories. The business is in charge of E. H. Griffith, who for the past four years has been general sales manager of the R. & J. Dick Co., of Passaic—manufacturers of balata belting—and who has had long experience in mechanical lines.

THE GOODRICH THE OFFICIAL SQUASH RACQUET BALL.

The Goodrich Squash Racquet Ball has again been selected by the United States Squash Racquet Association for official use by its members. This is a jet black ball, with rubber surface, $1\frac{3}{4}$ inches in diameter, weighing approximately 1 ounce, and is put up in sealed and dated boxes.

FIRE HOSE CONTRACTS AWARDED.

Among the contracts awarded by various cities during the past month for needed supplies of fire hose, are the following: American Rubber Co., 2,000 feet "Cracker-Jack" hose—Oakland, California; Boston Woven Hose & Rubber Co., 8,000 feet "Bay State" brand hose—Los Angeles, California; Bowers Rubber Co., 2,000 feet "Victor" jacket—Los Angeles, California, and 1,250 feet "Victor" brand—Oakland, California; Chicago Fire Hose Co., 1,000 feet—St. Joseph, Missouri; Eureka Fire Hose Co., 2,000 feet "Paragon"—Chattanooga, Tennessee; Fabric Fire Hose Co., 2,000 feet "Keystone"—Chattanooga, Tennessee; 500 feet—Troy, New York; 500 feet—Pekin, Illinois; 600 feet—Lewiston, Pennsylvania; B. F. Goodrich Co., 500 feet—St. Cloud, Minnesota; 1,350 feet—St. Joseph, Missouri; 500 feet—Troy, New York; Manhattan Rubber Co., 5,300 feet—New Haven, Connecticut; New Jersey Car Spring & Rubber Co., 500 feet—Chippewa Falls, Wisconsin; New York Belting & Packing Co., 1,000 feet—Racine, Wisconsin; Republic Rubber Co., 2,000 feet "Invader"—Los Angeles, California; and 500 feet each of "Overall," "C. C. C.," "Hudson" and "Admiral," by the city of Troy, New York, to local dealers.

STATEMENT OF THE BOSTON BELTING CO.

A condensed summary of the balance sheet of the Boston Belting Co., as of September 30 last, is as follows:

LIABILITIES.	
Capital Stock	\$1,000,000.00
Reserve Fund	800,000.00
Profit and Loss	129,166.17
Notes Payable	351,000.00
Unsettled Bills	1,974.55
ASSETS.	
Real Estate (Land and Buildings)...	\$329,711.85
Machinery	271,286.81
Tools, Furniture and Fixtures.....	102,122.91
Water Privilege	150,000.00
Cash	102,149.47
Bonds Receivable, Notes Receivable	745,984.75
Investment Acct., Accounts	
Merchandise	580,734.93
Trade Marks	100.00
Sundries	50.00
	\$2,282,140.72 \$2,282,140.72

The statement shows:

Quick Assets	\$1,428,809.15
Debts	352,974.55

Excess of Quick Assets..... \$1,075,894.60

SUBSCRIPTIONS TO THE NEW UNITED STATES RUBBER PREFERRED STOCK.

On November 6 a circular was sent out by the United States Rubber Co. to its stockholders announcing a new issue of first preferred 8 per cent. stock to the amount of \$9,422,000, each stockholder being offered the privilege of subscribing for one share of the new stock for every ten of either preferred or common then held.

The time limit of this subscription offer expired on December 15, and on the following day the company issued the statement given below:

"The amount of subscriptions received from our stockholders under the company's offering of its first preferred stock, with a few from abroad to be added, is \$1,715,700. Considering that general financial conditions have not been propitious to the placing of securities of any kind, the subscriptions are as much as has recently been anticipated.

"In making the offering, the directors intended, as was stated in their circular, after first giving our own stockholders and none others the privilege of subscribing at par, to place the unsubscribed portion in position to be disposed of to the public above par when times improve; the strong financial condition of the company making it inexpedient to offer the unsubscribed stock outside until general financial conditions are more favorable than at present. The untaken stock will not be disposed of to the public except at a figure substantially above par. Meanwhile, as a result of the above, the company has nearly \$2,000,000 additional permanent working capital."

RUBBER COMPANY DIVIDENDS.

On December 3 the directors of the Rubber Goods Manufacturing Co. declared the fifty-ninth regular quarterly dividend of 1½ per cent. on the preferred stock and a dividend of 1 per cent. on the common stock—both payable December 15, 1913, to stockholders of record at the close of business on December 10.

The Batavia Rubber Co. has declared a regular quarterly dividend of 1½ per cent. on its preferred stock and of 1 per cent. on its common stock, with an extra dividend of ½ per cent. on the common—payable January 1 on stock of record on December 15.

TRADE NEWS NOTES.

The Southern Tire & Rubber Co., incorporated in December, 1912, under the laws of Florida, has arranged for the erection of a factory at Augusta, Georgia, for the manufacture of automobile tires. The new building is to be 52 x 100 feet, on a site in the vicinity of the Armour Fertilizer Works, two acres of land on the Central Railroad having been purchased by the company for this purpose. The present expectation is to commence production by early spring.

A factory is being erected at Ecorse, Michigan, by the Williamson Pneumatic Tire Co.

Long Island City is soon to have a new tire manufacturing industry, a site for a factory for the production of automobile tires having recently been purchased in that city by the Akron Tire Co. The property covered by this purchase is located on the south side of Skillman avenue, between Honeywell avenue and Moore street, and comprises approximately 17,500 square feet.

Work has been practically completed on the brick addition to the plant of the Fairfield Rubber Co., at Fairfield, Connecticut.

The Hewitt Rubber Co. of Buffalo, New York, is erecting a power house at its plant located at Kensington avenue and the New York Central Railroad, and a large amount of equipment will be installed, the estimated cost of the improvements being \$61,000.

The Askam Rubber Co. has completed installation of the rubber reclaiming machinery required in its factory on North street, Milford, Connecticut.

The creditors of the Ennis Rubber Manufacturing Co., of New York, are to receive ¾ per cent. in settlement of their claims, a "first and final" dividend of this amount having recently been ordered paid.

The Hardright Brush Co., of Belleville, New Jersey—manufacturing brushes with rubber bristle setting and other patented and distinctive features—has adopted the trade-mark brand "Hardright" for its specialty, the use of the brand "Rubber-Vulc" and of the corporate name "The Rubber Bound Brush Co." having been refused by New Jersey State courts.

The capital stock of the Vulcan Rubber Co., of Erie, Pennsylvania, has been increased from \$100,000 to \$200,000.

The Dreadnaught Tire & Rubber Co. is to open its new tire manufacturing plant at Orangeville, Maryland, on January 1, with a force of 200 workmen. This company was incorporated in February, 1913, with a capital stock of \$1,000,000.

The Goodyear Tire & Rubber Co. of Akron has taken over the Standard Tire Protector Co. of that city and will hereafter distribute Standard Tire Protectors to the trade through its various branches.

According to the statement of the Swinehart Tire & Rubber Co., of Akron, filed in Boston, the assets of the company on August 31 amounted to \$1,325,616, including cash and accounts receivable, \$435,503; manufactured products and merchandise, \$561,519; real estate valued at \$90,242, and machinery valued at \$165,955. The liabilities of the company are shown to include capital stock outstanding, \$800,000; accounts payable, \$441,717, and a profit and loss account of \$73,392.

The Columb Tyres Import Co., incorporated in New York in September, and located at 1891 Broadway, succeeds the concern known as the Russian Tyre Sales Co., whose headquarters are at Riga, Russia.

The new service station of the B. F. Goodrich Co., at 1780 Broadway, New York, will be devoted exclusively to motor truck tires. The quarters occupied by the company at this address comprise about 20,000 feet of floor space, used for garage, shop and stock carrying purposes, the shop being located on the ground floor.

HANOVER RUBBER CO. SOON TO COMMENCE OPERATION.

The Hanover Rubber Co., incorporated under the laws of Massachusetts on December 1 with an authorized capital of \$25,000, is erecting a new factory at West Hanover, Massachusetts, and expects about the middle of January to commence production of a complete line of rubber heels and soles. The paid in capital of the company amounts to \$15,000, the remaining \$10,000 issue being held as treasury stock for the future needs of the business. The officers are: George J. J. Clark, president; Calvin J. Ellis, treasurer; A. O. Sellman, secretary—these three officers with Walter E. Parent, superintendent of the factory, being the incorporators.

CHANGE OF ADDRESS OF MAHLOW & WYCKOFF.

Mahlow & Wyckoff, makers of molds for the drug, sundry and mechanical rubber goods trade, have removed from their former location at 352 South Warren street, to larger quarters at Brunswick avenue and East Trenton railroad, Trenton, New Jersey, where, with considerably increased equipment and capacity they are in a position to make deliveries with greater promptness than heretofore.

EXTENSIONS AT THE KNIGHT PLANT.

The Knight Tire & Rubber Co. of Canton, Ohio, is enlarging its plant by the addition of two buildings 75 x 125 feet, three stories high, and one building 55 x 125 feet, two stories high; this extra space being sufficient to enable the company to double both its force of operatives and its production. It is estimated that the improvements under way will cost in the neighborhood of \$110,000, and that the daily capacity of the enlarged plant will be 500 tires and 700 tubes. This company has recently completed the installation of a new laboratory.

HERE IS THE FIRESTONE FAMILY.

The group shown below does not include all the salesmen of the Firestone force, but it does include some 219 of them. They were photographed recently when gathered together at a conference at the factory in Akron. They are an ambitious, active and aggressive lot of men and Mr. Firestone, who sits in the center, looks proud of them, and with just cause. They are all numbered and named below so that everybody can tell who's who.



A GROUP OF FIRESTONE SALESMEN

- | | | | | | |
|---------------------|----------------------|----------------------|-----------------------|----------------------|---------------------|
| 1. J. W. Thomas | 7. R. E. Glass | 25. D. F. White | 109. J. J. Foster | 145. F. W. Solarek | 182. A. W. P. |
| 2. M. F. Ake | 8. J. F. Lee | 26. G. A. St. | 110. M. K. Engel | 146. M. F. P. | 183. A. W. P. |
| 3. Wm. Clark Waters | 9. W. S. Campbell | 27. C. A. Clark | 111. R. W. Oslund | 147. J. H. McPherson | 184. D. T. Day |
| 4. Wm. A. Shuler | 40. Wm. I. Watson | 76. S. W. Harris | 112. G. A. Talbott | 148. F. P. Kendall | 185. John Irwin |
| 5. C. H. Gerhold | 41. H. A. Looman | 77. B. R. Looman | 113. E. M. Hahn | 149. J. W. Fleming | 186. J. R. W. |
| 6. H. W. Knebel | 42. R. C. Knebel | 78. I. D. Trelfall | 114. F. C. McCracken | 150. W. J. Shea | 187. J. C. G. W. |
| 7. F. F. Hunt | 43. G. I. Bates | 79. J. E. Bates | 115. G. L. Townsend | 151. A. G. Townsend | 188. R. F. W. |
| 8. O. F. Starr | 44. Geo. T. Hite | 80. R. F. Z. Bates | 116. Chas. M. Chapman | 152. R. G. Wicks | 189. C. W. Brown |
| 9. C. O. Brantley | 45. I. G. Looman | 81. A. D. Bates | 117. C. E. Morrison | 153. M. I. Anderson | 190. L. J. Sparks |
| 10. W. I. Burgess | 46. C. I. Root | 82. C. I. Albach | 118. W. G. Noble | 154. H. L. Smith | 191. R. T. Bates |
| 11. W. I. Fosterly | 47. A. G. Partidge | 83. I. E. M. | 119. J. I. Maves | 155. Ed. Weber | 192. J. S. I. |
| 12. D. C. Sander | 48. I. G. R. Johnson | 84. W. G. Rankin | 120. F. W. Thatcher | 156. K. P. H. Bates | 193. H. W. Smith |
| 13. W. R. Walton | 49. S. G. Carkhuff | 85. G. W. H. Bates | 121. G. W. Curtiss | 157. Wm. Taitte | 194. R. M. McConnel |
| 14. I. S. Firestone | 50. H. S. Firestone | 86. E. R. Wood | 122. J. I. H. Bates | 158. H. Pressman | 195. Jos. H. Walsh |
| 15. H. A. Coffin | 51. R. I. Firestone | 87. C. P. H. Bates | 123. M. A. Potter | 159. Geo. Meely | 196. J. M. S. |
| 16. F. S. Babcock | 52. F. C. Blumhard | 88. L. C. Oslund | 124. R. W. Phelps | 160. J. R. Looman | 197. A. J. S. |
| 17. F. A. Hoffman | 53. I. Sisle | 89. P. I. Aves | 125. F. W. Sherwood | 161. Earl Jost | 198. S. W. Kingsley |
| 18. W. G. B. Bates | 54. R. G. H. Bates | 90. N. C. Stevens | 126. R. G. Bird | 162. J. L. Craig | 199. R. E. Kingsley |
| 19. H. W. McEadden | 55. C. H. Sorrick | 91. C. A. Myers | 127. H. W. Darrow | 163. J. W. Craig | 200. S. L. Clark |
| 20. P. R. Talbott | 56. C. A. Plank | 92. C. H. Bates | 128. F. M. M. | 164. M. M. Whorley | 201. J. H. Bates |
| 21. F. I. Bailey | 57. G. W. Bates | 93. M. P. K. | 129. A. J. Smith | 165. R. V. Cline | 202. J. H. Bates |
| 22. Geo. M. Martin | 58. C. P. Sander | 94. E. S. Kelly | 130. E. B. Bowling | 166. R. E. Wolcott | 203. M. I. Bates |
| 23. E. L. Campion | 59. R. H. Looman | 95. I. J. Weldon | 131. Burt Stevens | 167. J. Campbell | 204. J. H. Bates |
| 24. A. W. Moore | 60. H. R. McKnight | 96. I. P. M. | 132. E. J. Sears | 168. W. A. Clark | 205. M. I. Bates |
| 25. J. F. McCombs | 61. H. I. Adams | 97. G. C. Faling | 133. N. P. Bates | 169. G. H. Smith | 206. S. M. S. |
| 26. J. F. Cast | 62. A. C. Galbraith | 98. Fred Way | 134. F. J. Flanagan | 170. M. A. Kennedy | 207. J. M. S. |
| 27. W. H. Bell | 63. I. C. Bailey | 99. L. L. McClintock | 135. M. M. McCallum | 171. J. R. Looman | 208. J. H. Bates |
| 28. T. L. Glenn | 64. H. I. McGee | 100. W. G. H. | 136. W. I. Bates | 172. J. L. Mallison | 209. H. C. Brenizer |
| 29. Wm. West | 65. A. L. Gale | 101. J. P. Moore | 137. D. B. Price | 173. H. I. Bates | 210. C. H. Maxwell |
| 30. A. L. Manley | 66. C. C. Carlton | 102. C. H. Harris | 138. J. C. H. Bates | 174. C. R. Bates | 211. D. E. Wilcox |
| 31. G. A. Richards | 67. B. W. Bates | 103. F. C. R. | 139. M. White | 175. W. I. Bates | 212. L. G. Smith |
| 32. R. L. Harpham | 68. P. W. Bates | 104. W. I. Andrews | 140. P. W. Gavin | 176. E. J. Baine | 213. J. I. W. |
| 33. E. W. Be Saw | 69. I. I. Bates | 105. A. G. Roberts | 141. W. R. Cain | 177. W. J. Lawrence | 214. J. I. W. |
| 34. M. L. Terbush | 70. R. I. Bates | 106. I. S. Curtis | 142. A. T. Tarbell | 178. F. B. Geary | 215. E. Farr |
| 35. J. P. Patterson | 71. J. T. Stuart | 107. I. A. Scott | 143. C. E. Jackson | 179. J. S. Wood | 216. J. I. W. |
| 36. L. W. Klein | 72. C. L. Miller | 108. R. E. S. | 144. H. I. Bates | 180. J. J. Shea | 217. J. I. W. |
| | | | | 181. H. I. Bates | 218. J. I. W. |
| | | | | | 219. H. A. Smith |

A FAMOUS GOODYEAR PORTRAIT SOLD.

An interesting transaction in art took place a few days ago, when the United States Rubber Co. purchased one of the two celebrated life-size half-length portraits of Charles Goodyear, painted a few years before his death by the American artist George P. A. Healy, a very distinguished portrait painter of sixty years ago. There were two of these oil paintings by Mr. Healy, both painted on hard rubber block made by Goodyear for that purpose. One of these portraits, the property of Mr. Nelson Goodyear, grandson of Charles Goodyear, attracted a great deal of attention in THE INDIA RUBBER WORLD exhibit at the Third International Rubber Exposition held at the Grand Central Palace in New York in September, 1912. This second portrait, which has also been the property of the Goodyear descendants, had been for some time prior to its transfer to the United States Rubber Co. on exhibition in the Brooklyn Academy of Arts and Sciences.

THE ASBESTOS & RUBBER WORKS OF AMERICA.

The December number of this publication contained a paragraph regarding the sale of the property of The Asbestos & Rubber Works of America to a new corporation, The Asbestos & Rubber Works of New Jersey, but a communication has been received from Mr. E. H. Garcin, president of the former company saying that the sale simply included the factory, machinery, stock, merchandise and other property located in the State of New Jersey. The statement continues: "All the property of this company, the trade-marks, the good will and all property of whatever kind or nature, outside of the State of New Jersey, remains the property of this company, and in addition they own 20 per cent. of the capital stock of the New Jersey company."

RUBBER AT THE SAFETY AND SANITATION SHOW.

Under the auspices of the American Museum of Safety, the first International Exposition of Safety and Sanitation was held in the Grand Central Palace, New York, from December 11 to 20. It attracted a good deal of attention, as both these subjects—safety and sanitation—are now very much in the public mind. Among the exhibitors there were two who had devices depending for their successful operation on rubber. One was the Draeger Oxygen Apparatus Co. of Pittsburgh, which had a fine exhibition of the Draeger helmet, intended for the use of miners so that they can enter for rescue work in a mine immediately after an accident from accumulated gases. This helmet is attached to a large rubber bag, worn across the breast of the miner, which is supplied with the proper amount of oxygen from a tank worn across the back. This breathing bag is connected by rubber tubes to the helmet fitted securely over the wearer's head, in which rubber plays an important part.

They also displayed their Pulmotor for the automatic resuscitation of those rescued from drowning and in other cases where a supply of oxygen is needed.

J. A. R. Elliott, of Seventy-fifth street, Brooklyn, N. Y., exhibited the Elliott Perfect Ear Protector, which is placed in the ear to protect the drum from excessive noises, wind, dust, or the entering of water when swimming. This protector depends for its efficiency on two rubber discs.

STAUNTON PATENTS PONTIANAK PROCESS.

Gray Staunton, of Chicago, has patented a process of preparing a new pontianak compound, which is said to serve as a most valuable ingredient in compounding rubber mixtures, especially where used as an insulating material. The ingredients which are mixed with the pontianak prepare it for working in the mixing rolls and will give the same result as if the new material were a crude rubber of medium or low grade. The new product can be cured as usual in the ordinary vulcanizing oven, but it acts very quickly, since a sheet $\frac{1}{4}$ of an inch in thickness requires only about an hour's exposure at a steam pressure of 60 pounds.

TRADE NEWS NOTES.

L. Albert & Son, scrap rubber dealers of Trenton, New Jersey, who have been doing business under the name of the Regal Rubber Co., have decided to drop this name, owing to the fact of its use by a company in another city, and have adopted the trade name of The Olden Rubber Manufacturing Co.

A contract has been awarded by the Kerite Insulated Wire & Cable Co. for a 65 x 150 feet three story and basement brick addition to its factory at Seymour, Connecticut.

The United Rubber Manufacturing & Reclaiming Co., incorporated with a capital of \$350,000, has chosen a location at Brantford, Ontario, for its plant, work on which is to be started early in the spring. A tract of three and a half acres has recently been selected by representatives of the company as the site of the new factory, which is expected to be 60 x 250 feet in area and to employ 100 men at the start.

The Independent Tire Co., whose factory at Toronto, Ontario, has been in operation only since early summer, turning out less than half its capacity of 500 tires a day, has issued a statement showing net earnings for the month of October equal to a 30 per cent. dividend on the total paid in capital.

The American Hand Sewed Shoe Co., of Omaha, Nebraska, has been reincorporated under the same name with capital stock of \$150,000. A. T. Austin, president of the original company, is not connected with the new concern. The directors of the new company are Albert A. McClure, Geo. H. Mayo and Henry B. Hubbard, the latter two being connected with the United States Rubber Co. The incorporators are A. A. McClure, T. W. Austin and E. G. McGilton.

The Kelly-Springfield Tire Co., whose first northwestern branch was opened about a year and a half ago, at 515 East Pike street, Seattle, Washington, has added another branch at 87 Broadway, North, Portland, Oregon, in its chain of service stations. Mr. Charles W. Harris, in charge of the company's business for the northwest, British Columbia and the Orient, states that progress has been phenomenal. The new branch combines offices, store room and work shop of sufficient size to accommodate several trucks at a time for the application of the company's well known block tires.

A company has recently been organized at Bridgeport, Connecticut, under the name of the Sanford Rubber Co., to deal in automobile tires and other rubber goods. The capital stock of this new company is \$25,000, and the incorporators are Wilbert Sanford, William Seward and Charles E. Williamson.

The New York branch of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has moved from Seventh avenue to larger quarters at Broadway and Sixty-seventh street, where a service station has also been established. The Chicago branch of this company—which distributes throughout the central west and is in charge of Charles H. Wright—has also taken larger quarters, having removed from 1241 Michigan avenue to the two-story building at 2031 Michigan avenue.

A service station is to be established by the Kelly-Springfield Tire Co. in the new building being erected at 551-555 West Fifty-seventh street, New York.

A branch is very soon to be established at Milwaukee, Wisconsin, by the Hubmark Rubber Co., of New York. This branch will be in charge of Victor M. Stamm, for eighteen years connected with the Goodyear Rubber Co., and will distribute to the trade in that vicinity "Hub Mark" and "Bay State" footwear, "G. & J." tires and a general line of the United States Rubber Co.'s waterproof clothing, mechanical rubber goods and druggists' sundries.

Braender tires are hereafter to be distributed in Boston and the surrounding section by the Dayton Tire Co., located at 589 Boylston street.

THE NEW YORK COMMERCIAL CO. VS. SWINEHART.

The suit brought against the Swinehart Tire & Rubber Co. of Akron, Ohio, by the trustees in bankruptcy of the New York Commercial Co. in the New York District Court, has been transferred, upon request of the defendant company, to the Federal Court. From the complaint on file it appears that shipment of **Upriver Fine Para** to the value of \$22,362.67, on contracts held on February 15, when the New York Commercial Co. was petitioned into bankruptcy, were made by the receivers of that company to the Cuyahoga Rubber Co., the arrangement being that several promissory notes of the Cuyahoga company, endorsed by the Swinehart Tire & Rubber Co., were to be given in payment; and these notes or their equivalent not having been received, the trustees in bankruptcy have sued for the above mentioned amount, with interest and costs.

NEW INCORPORATIONS.

Airless Tire Filler Co., November 19, 1913; under the laws of Alabama; authorized capital, \$2,000. Incorporators: W. E. Oldham, J. D. Smith and J. F. Kilton. Location of principal office, Birmingham, Alabama.

Allen-Keppel Rubber Co., October 1, 1913; under the laws of Virginia—initial incorporation January 21, 1913, under name of Flynn-Allen Tire Corporation—authorized capital, \$10,000. Incorporators: James J. Flynn, George A. Allen—both of Richmond, Virginia—and C. R. Caldwell, Staunton, Virginia.

American Waterproof Sole Co., November 29, 1913; under the laws of Massachusetts; authorized capital, \$90,000. Incorporators: Edmund J. Barry, Brockton, Joseph A. Safford, Cambridge, Gustav J. Nord, Dorchester—all of Massachusetts. To buy sell, and deal in boots, shoes, waterproof goods, etc.

Artillery Auto Tire Protector Co., November 5, 1913; under the laws of Delaware; authorized capital, \$10,000. Incorporators: A. J. Coppock, Indianapolis, Indiana; John C. Wellington and H. C. May—both of Pittsburgh, Pennsylvania. To manufacture and sell protecting devices for tires.

Barnard-Michael Tire Co., Inc., December 22, 1913; under the laws of New York; authorized capital, \$100,000. Incorporators: Robert S. Barnard, Isidore and Sidney M. Michael—all of Buffalo, New York. Location of principal office, Buffalo, New York. To manufacture auto tires, accessories, etc.

Central Prest-O-Seal Co., November 17, 1913; under the laws of Indiana; authorized capital, \$50,000. Incorporators: Harry L. Archie, Frank K. Gardner and Grace C. Grimes.

Eureka Resilient Wheel Co., November 6, 1913; under the laws of Kentucky; authorized capital, \$10,000. Incorporators: Thomas Sharp and C. A. Simpson—both of Ludlow, Kentucky—and Charles E. Schroeder, Cincinnati, Ohio. To manufacture a resilient wheel whereby the use of pneumatic tires may be done away with and solid tires substituted.

Hanover Rubber Co., December 1, 1913; under the laws of Massachusetts; authorized capital, \$25,000. Incorporators: George J. J. Clark, Calvin J. Ellis and Albert O. Sellman—all of West Hanover, Massachusetts. To buy, sell and manufacture rubber, rubber scrap, etc.

Henderson Tire Co., Inc., December 3, 1913; under the laws of New York; authorized capital, \$400,000. Incorporators: Chester O. Henderson, 133 Kensington avenue; Ralph R. Hillman, Ellicott Square, and Alfred L. Lyth, 43 West Eagle street—all of Buffalo, New York. Location of principal office, Buffalo, New York. To manufacture tires, tubes, etc.

Kapit & Greenberg, Inc., December 3, 1913; under the laws of New York; authorized capital, \$3,000. Incorporators: Nathan

Kapit, Bernard A. Greenberg and Samuel B. Tomberg—all of 47 East Broadway, New York. Location of principal office, New York. To manufacture and deal in waterproof clothing, etc.

Lackawanna Rubber Co., December 5, 1913; under the laws of New Jersey; authorized capital, \$10,000. Incorporators: Walter F. Smith, Alice F. Smith and J. Clifford Stricker—all of Trenton, New Jersey. To manufacture, purchase and sell all kinds of goods of which rubber is a component part.

Lansing Rubber Works, December 5, 1913; under the laws of Michigan; authorized capital, \$50,000. Incorporators: Arthur C. Haite, Frank Preuss—both of Lansing, Michigan—and Harry Shepherd, Birmingham, Michigan. Location of principal office, Lansing, Michigan. To manufacture mechanical lines of rubber goods, and mattresses.

The Raincoat Co., Inc., December 1, 1913; under the laws of New York; authorized capital, \$20,000. Incorporators: Jacob Manne, 231 Park Place, Brooklyn, New York; William Eastman, Roslyn, New York, and May R. Meville, 422 First avenue, Elizabeth, New Jersey. Location of principal office, New York. To manufacture and deal in rubber coats, etc.

The Sanford Rubber Co., November 5, 1913; under the laws of Connecticut; authorized capital, \$25,000. Incorporators: Wilbert Sanford, Bridgeport, Connecticut; William Seward, New Rochelle, New York, and Charles E. Williamson, Bridgeport, Connecticut.

Volco Rubber Co., Inc., November 26, 1913; under the laws of New York; authorized capital, \$5,000. Incorporators: Charles Claghorn, L. W. Newbery and William Durbrow—all of 206 Broadway, New York.

Wisconsin State Rubber Co., November 6, 1913; under the laws of Wisconsin; authorized capital, \$10,000. Incorporators: H. D., D. E. and S. B. Detienne, and J. L. Wallis. To buy, sell and deal in rubber goods, and to do a general jobbing business of everything in rubber.

The Worcester Tire Fabric Co., December 10, 1913; under the laws of Massachusetts; authorized capital, \$50,000. Incorporators: Arthur D. Sykes, Rockville, Connecticut; Peter Reilly, Union street, and Edwin G. Norman, 311 Main street—both of Worcester, Massachusetts. To buy, sell, manufacture, and deal in rubber and all fibrous materials, and machinery, tools and appliances used in connection therewith.

Wynn Pneumatic Puncture-Proof Tire Co., December 1, 1913; under the laws of Michigan; authorized capital, \$25,000. Incorporators: Robert J. Wynn, Henry Hickler and Marshall N. Hunt—all of Sault Ste. Marie, Michigan. Location of principal office, Sault Ste. Marie, Michigan. To manufacture and sell pneumatic tires, wheels and other rubber goods.

San-Air Co., November 25, 1913; under the laws of Kentucky; authorized capital, \$500. Incorporators: J. T. Lockridge, W. F. Smity and J. W. Christy. To manufacture a preparation to prevent pneumatic tires from puncturing.

COTTON GINNING FOR ELEVEN MONTHS OF 1913.

According to the early December report of the Census Bureau, 12,081,100 bales of cotton had been ginned in the United States up to December 1 of 1913, 61,516 of this number being Sea Island. Included in this total are 86,760 round bales, counted as half bales. This quantity is supposed to represent approximately 83 per cent. of the entire 1913 crop, this calculation being based on the average ginnings of the same period for the last seven years. The total number of bales ginned during the corresponding eleven months of 1912 was 11,954,541, and for the same period in 1911, 12,816,807. Texas figures most prominently in this showing, with 3,571,331 bales, Georgia, Alabama and South Carolina following next in importance.

JOHNS-MANVILLE BRANCH CHANGES.

The Baltimore, Maryland, branch of the H. W. Johns-Manville Co. has been compelled by increase of business to secure additional space for its operations, and its removal is announced, to a location at 207-213 East Saratoga street, a modern six-story building in the center of the business district. The company has now not only attractive offices, stores and warehouse accommodations, but a railroad switch running into the building affording convenient means for the receipt and shipment of merchandise. The Cleveland, Ohio, branch of the company has also been obliged to provide larger quarters for several of its subsidiary offices as well as additional warehouse space, another building, now being remodeled, having recently been leased for storage purposes. Other company branches in Ohio have also removed to new quarters, present locations in the various cities being: Akron, 717 Second National Bank building; Columbus, office and contract department, 45 West Long street—warehouse half a block distant; Dayton, 259 Fourth street arcade; Toledo, 213 Water street; Youngstown, 502 Stambaugh building. The branch at Toronto, Ontario, has removed to larger quarters in the center of the wholesale district, its present location being 19 Front street, east, the store and warehouse having a combined floor space of about 35,000 square feet.

The Johns-Manville concern has recently closed a deal whereby it is to market, during a period of ten years, the complete output of the Jones Speedometer Co. of New York City.

TRADE NEWS NOELS.

Headquarters have been opened at 1019 Main street, Buffalo, New York, for the sale of Knight tires in that city and vicinity, with J. C. Carter in charge.

The capital stock of the Century Rubber Works of Chicago has been increased from \$50,000 to \$100,000.

The Boston Batavia Rubber Co. has taken offices in the new building of the Overland company in Boston, on Massachusetts avenue.

The Empire Rubber & Tire Co., of Chicago, has changed its location on Michigan avenue from No. 1305 to No. 1627.

The Cleveland, Ohio, office of the Portage Rubber Co., of which C. E. Ball is manager—has been removed to 1816 Euclid avenue, in the center of the motor car district. Besides affording ample and much finer office space, a portion of the new quarters is used for the storage of tires, a complete line of which is carried in stock.

The consolidation of the Diamond and Goodrich rubber companies has been followed by the consolidation of the branches of the two companies in various cities, among others those of Portland, Oregon, and Indianapolis, Indiana. At the latter point, H. A. Little, former manager of the Goodrich branch, is to be in charge of the combined agency.

The Allen Auto Specialty Co. has removed its Chicago salesroom from 1436 to 1627 Michigan avenue. This company manufactures tire cases and gauges and is shortly to extend its operations by the opening of a San Francisco branch to take care of the trade on the Pacific coast.

The Vancouver Vulcanizing Co. has secured the agency for Diamond Rubber Co. products in Vancouver, British Columbia, and the surrounding territory.

An agency has been established at Seattle to handle the sale of Savage tires in King and Pierce counties, Washington, the firm with which this agency has been placed being composed of H. D. C. Chetlin, C. R. Maybury and E. F. Tawney.

The tire duck factory of the Goodyear Tire & Rubber Co., at Williamsville, Connecticut, now in process of enlargement, will be operated overtime when completed. The manufacture of automobile tire duck is quite an important industry in eastern Connecticut, this Goodyear plant and the three other mills engaged in similar production in Putnam and Danielson, all having sufficient orders on hand to make overtime operation necessary for some weeks.

MR. PEARSON SAILS SOUTH.

Mr. Henry C. Pearson sailed on the "Commeweyne" of the Royal Dutch West India Mail, for the Spanish Main, on December 19. It is his plan to resume his winter travel stories in rubber lands very soon.

MR. WADLFIGH SAILS FOR SINGAPORE.

Mr. W. L. Wadleigh has spent approximately one-half of the fifty years that have elapsed since he had the privilege of being born in Boston, as a commission merchant, placing with American consumers various products from foreign markets. In this work he has come into active association with the rubber importing business, and became extremely interested in this line many years



W. L. WADLEIGH.

ago, so much so that about ten years ago he went to Mexico and spent a great deal of time there for five years, working out the *Castilloa* problem. On returning to Boston to devote his time as formerly to his commission business, he sold a great deal of Mexican rubber, taking the product of some eighteen different plantation companies and private estates, which he distributed directly to the consumer. But he states that he realized several years ago that the great rubber mart of the future would be Singapore, and so he determined to make connections with the Middle East. With this in view he will sail on the steamship "Princess Irene" on January 8 for Naples, and connect with a steamer which he expects will land him in Singapore on February 14. He intends to remain there during the winter in order to effect the proper association with Eastern planters, and then in the early summer will return to this country and locate his office in New York City, where he will act as a commission merchant for the planters and sell direct to American consumers.

PERSONAL MENTION.

H. G. Moesta, for the past year in charge of the Louisville, Kentucky, branch of the United States Tire Co., has been transferred to the company's New York office, being succeeded in the management of the Louisville branch by F. S. Copley, former district manager with headquarters at Minneapolis.

John D. Ertel, employed for some time past as traveling auditor for the Firestone Tire & Rubber Co., of Akron, is now associated with the Philadelphia branch, as assistant to W. R. Walton, the general manager.

W. E. Cameron has been appointed sales manager of the Motz Tire & Rubber Co. of Akron, a position for which he is well qualified by reason of his previous connection with the company as western sales manager.

THE VIEWS OF MR. WILLIAM A. DE LONG

In an interview with a representative of THE INDIA RUBBER WORLD, Mr. William A. De Long, who spent almost his entire life in the rubber business until his retirement several years ago, summed up in a few words the principal reasons for the present market conditions. His statement is in substance as follows:

"A discussion of the question as to whether Singapore is to be the world's future rubber market can only be theoretical. The locations of the rubber markets of the future will necessarily depend upon future conditions, the same as present conditions control the present shipments of rubber. If we turn to THE INDIA RUBBER WORLD of almost any month, it will be seen that the shipments of rubber from London to New York greatly exceed those from all other ports combined, including Hamburg, Antwerp, Colombo, Havre, Amsterdam and Singapore.

"Singapore is a primary market and if rubber were free to be shipped direct from that port to New York, it is plain to be seen that there would be many advantages in so doing. But the greater part of the eastern plantation rubbers are financed in England and Europe and the owners of the plantations are therefore often limited as to the disposal of their rubber, by reason of contracts made during the financing of the plantations. It is for this reason that most of the rubber coming from Singapore and other primary ports is shipped to European markets, where it is under the direction of the financiers who control it. This is, beyond doubt, not an advantageous method of getting the rubber to the dealer and the consumer, but those are the conditions at present.

"As to the future, it is probably not fair to predict that it will not be long before plantation owners or European financiers who control eastern plantation rubber will awaken to the fact that it is more advantageous to dispose of their product direct from Singapore or other primary markets. Syndicates will probably be formed and agents established in Singapore so that the rubber may be shipped direct from plantation to dealer and thence to the manufacturer."

PERSONAL MENTION.

At the last meeting of directors of the Boston Woven Hose Co., at Boston, Massachusetts, Geo. E. Hall, general manager, was elected to the vice-presidency of the company, his present official title being vice-president and general manager.

J. Haney, for the past three years associated with the Pittsburgh branch of the United States Tire Co., has been transferred to the company's Boston branch, of which E. H. Kidder is general manager.

The directors of the Republic Rubber Co. of Texas, at a recent meeting elected L. A. Watts, who has been for a number of years connected with the branch at Chicago, president and treasurer. The secretary of the Texas company, F. M. Randall, is thoroughly familiar with the trade in that field, having long been identified with the distribution of Republic tires in Texas and the surrounding country.

On January 1, Harry E. Field, a member of the sales force of the Thos. B. Jeffery Co., of Kenosha, Wisconsin, is to sever his connection with that company, in order that he may devote his entire time to the business of the Kelly-Field Co.—thus carrying out the arrangement entered into when this company was formed, in August, 1912, to handle the distribution of the tire and accessory output of the Lee Tire & Rubber Co.

J. C. McDiarmid has been promoted to the management of the Goodyear Tire & Rubber Co. branch at Portland, Oregon, from a position with the same company at Seattle, Washington.

E. S. Rickel, who for a number of years represented the Diamond Rubber Co., has succeeded J. W. Cully as manager of the Swinehart Clincher Tire & Rubber Co. of Detroit, Michigan.

MR. FRANKLIN W. PITCHER CELEBRATES HIS 80TH BIRTHDAY

Mr. Franklin W. Pitcher, president of the Easthampton Rubber Thread Co., long since located that fountain that Ponce de Leon missed, for while he celebrated the eightieth anniversary of his birth on last Christmas Day he is in reality about forty years old.



FRANKLIN W. PITCHER

But his secret, as a matter of fact, is no secret at all. It is his perennial, persistent, overflowing optimism—which is logical, for who being born on Christmas Day would not be an optimist? It may be that there is an additional explanation of his youthfulness in the fact that Mr. Pitcher has always been too busy to grow old.

Nothing could be more interesting than conversation with Mr. Pitcher on the great industrial development of the eighty years spanned by his life. He makes the statement—which at first seems almost incredible but as a matter of fact is strictly true—that in 1833, when he was born—down in Dover, Maine—the only corporations in the United States were those interested in turnpikes and toll bridges. Reaping was done with a hand sickle; and he still bears the scar of a sickle on the little finger of his left hand, as a reminder of that fact. And all threshing was done with a flail. It has been a wonderful procession of progress during these eighty years, and Mr. Pitcher has been continuously in it.

He became associated with the rubber industry in 1882, when he closed out his lumber interests in Wisconsin and invested in the business of the Boston Elastic Fabrics Co. When later this company was liquidated and the Revere Rubber Co. was formed, it took its name from the fact that Mr. Pitcher, one of its directors, lived in Revere. Since 1882 he has been continuously and prominently identified with rubber manufacture, having been for a number of years president of the Easthampton Rubber Thread Co., at Easthampton, Massachusetts. One of the most interesting remarks made by Mr. Pitcher when asked for some review of his rubber career was his eulogy on a number of his contemporaries. "I was very fortunate," he said, "in being associated with some big-hearted, whole-souled, helpful men. I name especially with reverence Mr. E. S. Converse, Mr. Geo. A. Alden and Henry C. Morse. They were enough to save a city."

The eightieth birthday party, given in his honor on Christmas Day, was not an invitation affair but simply an "open house," and it was attended by a great number of people, including not only his neighbors in Easthampton but many of his business associates from a considerable distance. And of all the number there, Mr. Pitcher was one of the least old.

A Few of the Latest Tires.

SPRING TIRE WITH A RUBBER BLOCK TREAD.

IN their search for a practical automobile wheel with the resilient qualities of the pneumatic and without its disadvantages, inventors have brought out numerous designs embodying spring hubs, spring spokes and spring rims, the majority of which



OHLSSON SPRING AND RUBBER BLOCK TIRE.

have proved either too expensive to manufacture in competition with the pneumatics, or impractical in actual operation. Here, however, is a wheel of entirely new design, which lays claim to at last having solved the problem. It has been examined in operation by a representative of the INDIA RUBBER WORLD, and seems to uphold the contentions of the designers. A good idea of the construction of this tire may be gained from the illustration. It has a solid rubber tread consisting of rubber blocks, each attached to a steel plate so that each plate and block is independent of the one adjacent to it. In the center of each plate is a depression or groove, so that when all plates are placed end to end a continuous channel is formed around the wheel. Through this channel runs a flexible, endless steel cable which binds the blocks securely together, resists the pressure of the springs and allows the tread to weave over the road, regardless of the condition of the surface. The felloe has a flat rim provided with two series of studs, over which the springs are set. Each plate also has two corresponding studs and is supported by two springs. Thus, it will be seen that the whole tire is of simple construction as well as substantial, there being no wear on any part except the rubber blocks. In case of injury to one of these blocks, it can be removed in a few minutes and a new one bolted on in its place. [The Ohlsson Spring Tire Co., 528 Bergen street, Brooklyn, New York.]

THE WHISTLE BLOWS WHEN THE TIRE IS FLAT.

Another device has recently been put on the market similar to the one described in December, except that here the rod is inserted into the tube instead of being situated outside, and the signal which it gives of the soft tire is by means of a whistle instead of by means of a bell. In this apparatus a valve is fitted

with a slender rod projecting down into the tube a certain distance, and when the tire becomes sufficiently deflated so that the tread is pushed against the rod, the rod is pushed into the valve and causes the whistle to blow.

A NEW REPUBLIC TIRE TREAD

The accompanying illustration shows a new non-skid tire for use on light cars. It is called the "WM" tire, since the design forms these two letters. This tire is made in the following sizes: 30 x 3, 30 x 3½, 32 x 3½ inches. [The Republic Rubber Co., Youngstown, Ohio.]

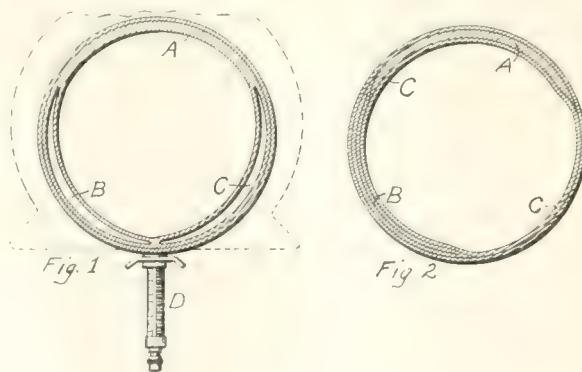


REPUBLIC "WM" TIRE.

THREE PNEUMATIC TUBES IN ONE.

While all sorts of constructions and improvements in the outer casings of automobile tires have been introduced, very few changes have been made in the design of the inner tube. Here, however, is a tube which embodies three independent tubes in one.

On the exterior it resembles any ordinary inner tube, but by reference to the cross sectional views it will be seen that it differs radically from the usual construction. The three tubes are shown at *A B* and *C*. They may be inflated independently, one at a time, by means of a specially constructed tire valve *D*, which has three separate air passages leading to the three tubes. When the tube is placed in the tire the section *A* is first inflated by turning the valve so that the proper air duct communicates with this section. The compressed air in the tube *A* flattens the walls of the tubes *B* and *C* against the outer walls as shown in Fig. 1, and the tire is run with the one tube inflated until a puncture occurs. Then instead of having to replace the tube, or to repair the puncture, the valve is turned into such a position that either tube *B* or *C* may be inflated. In Fig. 2 the tube *C* is shown inflated so that it entirely fills the internal space of the tube *A*, and at the same



NEW TRIPLE INNER TUBE.

time increases the thickness of the tread portion of the tube. When this tube becomes punctured the third tube may be inflated and used until a third puncture occurs. The advantages of such a tube may be readily recognized by any driver who has had the experience of having to stop by the wayside and spend many valuable minutes in repairing a puncture. [U. S. Patent No. 1,078,515.]

New Rubber Goods in the Market.

PORTABLE LAMP WITH RUBBER SUCTION CUP.

SOMETHING entirely new in a portable electric lamp has recently made its appearance on the market. It embodies several new features which make for great convenience, including a rubber suction cup by means of which the lamp may be stuck to any smooth surface with the bulb and re-



WALLACE LAMP, WITH RUBBER SUCTION CUP.

flector pointing in any direction. In the illustration, 1 shows an adjustable and removable shade which fits any style of electric bulb. The lamp may be hung up by the hook 2 or clamped in a horizontal position on a bed or chair by the rubber covered clamp 3. The rubber suction cup 4 is placed in the center of the base and by its use the lamp may be made to stick to a mirror, window or any smooth piece of furniture or metal. A ten foot cord is supplied with each lamp and this cannot become tangled since it is coiled up in the base 7 when not in use. [Wallace Novelty Co., 299 Madison avenue, New York City.]

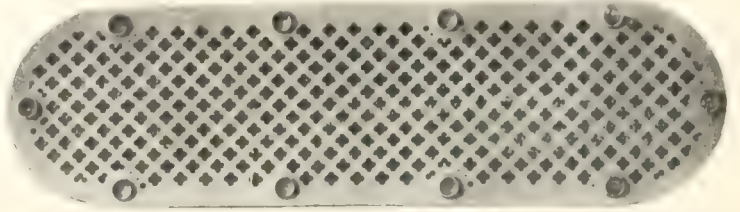
THE PNEUMATIC FLOATING DUCK BLIND.

Pneumatic boats, in combination with wading pants, have been described and illustrated in our pages as far back as August, 1895, but the illustration below shows a French device of the Unsinkable Boat or Duck Blind variety of such finished ingenuity as to be capable of beguiling the most suspicious and wary of ducks, and of luring it within range of the sportsman's rifle. This boat—constructed of vulcanized rubber over heavy canvas—is oval in shape, slightly wider at the back than at the front, and has a large floating surface. It is quite steady, said to be unsinkable, and has four compartments, fitted with safety valves, which can be blown up by means of a pump, the upper compartment being designed to protect the sportsman from the waves in bad weather. In the bottom of the boat is a flat reinforced seat, also two openings or boots, fitted with pneumatic paddles. The boat is intended to be inflated on shore, after which the sportsman inserts his legs into the boots—supporting the device with a strap passed over his shoulder—and walks into the water to a depth which is sufficient to support him, when he may sit down. Then, by means of the rudder in the rear of the boat and the backward and forward movement of his legs, he is able to travel, easily and without fatigue, in any direction. Sockets are provided along the outer edge of the float in which grass, branches, etc., are placed to hide the hunter. (Abercrombie & Fitch Co., 53-57 West 36th street, New York.)



A NON-SLIP BATH MAT.

An India rubber mat for the bottom of the bath tub—which retains its position by the action of suction cups along its outer edge, as shown in the accompanying illustration—is another of the late inventions contributing to the comfort and convenience of man, adding to the feeling of gen-



INDIA RUBBER BATH MAT.

eral satisfaction induced by the bath, the further agreeable sensation of security; for this mat permits him to recline in the tub without any risk of slipping. [The Leyland & Birmingham Rubber Co., Limited, Leyland, Near Preston, England.]

RAINCOATS.

Styles in raincoats continue to engage the attention of designers of ladies' outer garments, and the accompanying illustrations represent two of the latest attractive showings in this

line. The women's coat, with its mandarin sleeves, convertible collar, detachable half belt, patch pockets and deep cuffs, is made of rubber-backed spun-silk Ottoman cloth: while the misses' Slip-on is of silk-finished rub-



WOMEN'S RAINCOAT.

berized cloth and has, besides the belt and pocket features, an inlaid velvet collar and raglan sleeve. Either of these coats may be had in tan, gray, black or blue, and the stitched brim rubber hat also illustrated may be had in tan or black.



MISSSES' RAINCOAT AND HAT.

NEW TRADE PUBLICATIONS.

THE HODGMAN COMPANY'S 75th ANNIVERSARY BOOK.

THE Hodgman company does not say so in so many words, but it is fairly obvious that its motto is, "If a thing is worth doing it is worth doing well." At any rate, that is the idea one gets on looking over the book entitled "A Pioneer in Rubber" just issued by the company as a souvenir of the completion of three-quarters of a century of active business life. It is a most creditable book, creditable alike to author, artist, engraver, printer, paper maker and binder.

THE INDIA RUBBER WORLD of last July contained a three page story of the career of the Hodgman Rubber Co., as was proper considering the fact that this company, then completing its seventy-fifth year, is undoubtedly the oldest rubber manufacturing company continuously in existence in the United States, and in view of the further fact that the company has been under the management of one family during all this time, now being in the hands of the third generation of Hodgmans, with the fourth generation preparing to come on the scene in the early future.

This souvenir book tells the company's story, modestly but still in such a way that the reader gets a clear impression of the continuous growth of the corporation from its humble beginnings in 1838 to its present very considerable dimensions. The book opens with this paragraph:

"It would be hard to say how much rubber is the child, how much the parent, of present-day civilization. Rubber is the bed of birth, a source of solace to infancy, a giver of games and gladness to childhood, a maker of mirth to youth, an invaluable instrument of manhood's industry, an alleviator of the aches of age."

Now there is a paragraph quite out of the commonplace at least. If you are fond of alliteration you will follow on to see how long the author can keep it up, and if you are not fond of alliteration you will read on to see where it stops. At any rate, that paragraph hooks deep into your attention at once; and the story sustains the interest thus provoked to the end. In addition to the history of the Hodgman company there is an added chapter giving briefly the general story of rubber gathering and manufacture.

It is an octavo of 56 pages, printed on heavy India tinted coated paper; it has many fine halftone illustrations, including photographic reproductions of Daniel Hodgman, the founder of the enterprise, George F. and Charles A. Hodgman, of the second generation, and George B., Fred. A. and S. T. Hodgman, of the present generation, respectively president, vice-president and treasurer of the company today.

Souvenir books are of three kinds: first, those skimmed over and deposited in the basket to be removed at night; second, those glanced at and put on a corner of the desk to be skimmed over again later and then dropped in the basket; and third, those that are numbered and catalogued and put on the shelf in the permanent library. To this last class belongs the Hodgman souvenir book.

REQUIREMENTS OF INSULATED WIRE.

The requirements of insulated wire include maintenance of perfect condition in use as to hardness, flexibility and smoothness of surface. Each braid should be separately saturated. In a neat booklet dealing with this subject The American Insulated Wire & Cable Co., Chicago, claims that its products meet all these conditions. Each size of the finished product is made uniform in diameter.

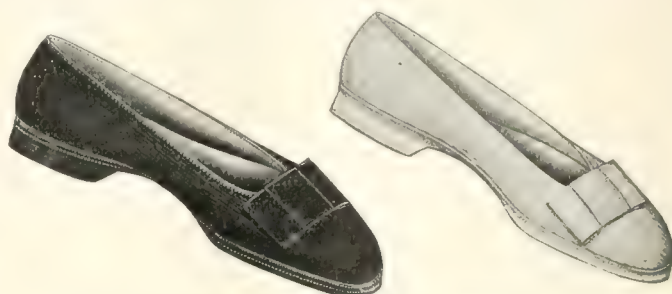
A LIVE ADVERTISEMENT.

Advertising attracts sufficient attention when it is the right sort of advertising. A retailer in Fitchburg recently hit upon an idea to get people around his front windows which was eminently successful. He deals in rubbers that have a bear trade-mark—presumably these are the Wales-Goodyear rubbers, as this company has exploited its bear trade-mark for many years—

and in order to impress the bear brand on the people of his town he installed in one of his large front windows a big cage containing three small black bears. It is hardly necessary to add that all the youngsters of the town, up to eighty years of age, spend a good deal of their time in front of that window.

CANVAS PUMPS WITH RUBBER SOLES.

The United States Rubber Co. has issued a supplementary net price list—date of December 1—of sporting and outing shoes, illustrating the shoes—made both in Bal. and Oxford—called the "Admiral" and the "Campfire." The feature of this price list, however, consists of the page devoted to pumps, which are



MEN'S AND WOMEN'S PUMPS WITH RUBBER SOLES

made in white duck with white rubber soles and also in black duck with black rubber soles, in men's and women's sizes. While these pumps are evidently intended chiefly for wear on board yachts and around summer hotels, they probably will be used quite extensively by those frivolous young people who persist in doing the tango. The accompanying cut shows both the black and the white pumps.

DIARIES AND CALENDARS FOR 1914.

Some things pall by repetition; and again some things do not—as, for instance, a good dinner superimposed upon a keen appetite, a good cigar after the dinner, and a new diary and a fresh calendar at the beginning of each year.

A number of the firms connected in one way or another with the rubber industry have favored their friends and customers with a diary or a calendar for 1914.

The Birmingham Iron Foundry, of Derby, Connecticut, has sent out a limited number of handsome little pocket memorandum books with gilt edges and bound in dark green Russia leather. In addition to an ample number of blank pages for memoranda there are several pages in the front and back of the book full of general information of a useful character; for instance, the population of the different American cities, the value of the coins of foreign countries, and various tables to which one wishes frequently to refer and which nobody—his second year out of school—can remember.

John Royle & Sons, Paterson, New Jersey, machinery manufacturers, have favored their friends with a small pocket diary with space for four days on each page, and with calendars for the years 1914 and 1915. In addition to the diary section there are pages for addresses and for cash account—a very convenient little pocketbook.

The Apsley Rubber Co., of Hudson, Massachusetts, manufacturers of rubber footwear, have issued a useful desk diary 5 x 8 inches, with a page for each week, the whole mounted on heavy card board and provided with a cover of heavy ornamental paper; an exceedingly useful piece of desk equipment, with room enough for important memoranda of each day.

The Loewenthal Co., the scrap rubber house of New York City, contributes to the pleasure of the New Year by providing its patrons with a desk pad calendar mounted on a nickel standard. The calendar has a page 3 x 4 for each day of the year—one side of the page giving the date, together with a com-

plete calendar for three months, while the reverse side is intended for memoranda.

The New Jersey Rubber Co., of Lambertville, New Jersey, manufacturers of all kinds of reclaimed rubber, also send out a calendar pad to be used on a metal standard, similar to the one described above, having the date on one side and space for memoranda on the other.

J. W. Coulston & Co., importers of paints and colors, of 80 Maiden Lane, New York, have mailed to their customers a desk memorandum calendar 4 x 7 inches in size, having a page for each week, the calendar pages being interleaved with information regarding the materials which the house imports.

A number of handsome wall calendars have been received in this office, among which the following may be mentioned: The calendar issued by the United States Rubber Co. is generous in proportions, being 20 inches wide by 32 inches long, and displays a striking panel in colors 15 x 21 inches in size. This panel shows in the centre the handsome marble building owned and occupied by the company, at Fifty-eighth street and Broadway, New York, whose twenty stories looming above everything in that part of the town can be seen from a great distance. This building is but a short block from Columbus Circle, where there are two famous monuments—the Columbus monument, which has stood in the centre of the circle for many years, and the beautiful Maine monument, in commemoration of the heroes who went to their death in Havana harbor fifteen years ago. Both of these monuments are shown in the panel.

The Textile Finishing Machine Co., of Providence, Rhode Island, manufacturers of dyeing, drying and other machinery, has supplied its customers with a large wall calendar, 22 x 24 inches in size, which shows a finely colored reproduction of a fresco in the "House of the Vettii," Pompeii, known as "The Dyers."

Tyson Brothers, makers of rubber substitutes and chemicals, of Carteret, New Jersey, have issued an artistic wall calendar, 11 x 14 inches in size, with a handsome colored panel in the center showing a woodside road. This is a calendar that is likely to be carried home.

Distinct from the calendar mentioned above is the one issued by The Stamford Rubber Supply Co., makers of rubber substitutes, Stamford, Connecticut. This is intended for the office. It is a plain board mount on which there are 365 leaves, one for each day, the date being displayed in type over 3 inches high, so as to be visible at a considerable distance.

Those who have received one of the calendars distributed—probably in not too large quantities—by the Adamson Machine Co., makers of rubber machinery, of Akron, Ohio, may consider themselves among the very fortunate, for it is a fine piece of art. The calendar consists of a cream-colored mat fastened to a buff card with a silk ribbon, the extreme dimensions being 15 x 18 inches. The upper part of the calendar is filled with a triple panel showing in a gilt frame a soft evening landscape. The sun has just set and the golden clouds in the sky are reflected in the quiet waters of a gentle stream. Sloping banks of green and a little cluster of trees add to the general effect. It is printed in very delicate colors and makes a charming picture. Very few of these calendars will linger in the office—they are destined to hang in a great many "best" rooms.

VARIOUS HOLIDAY SOUVENIRS.

The Cell Drier Machine Co., Taunton, Massachusetts, has favored its customers with a useful souvenir in the shape of a brass hand blotter, set off with red, giving a very striking color effect and having a curved blotting surface.

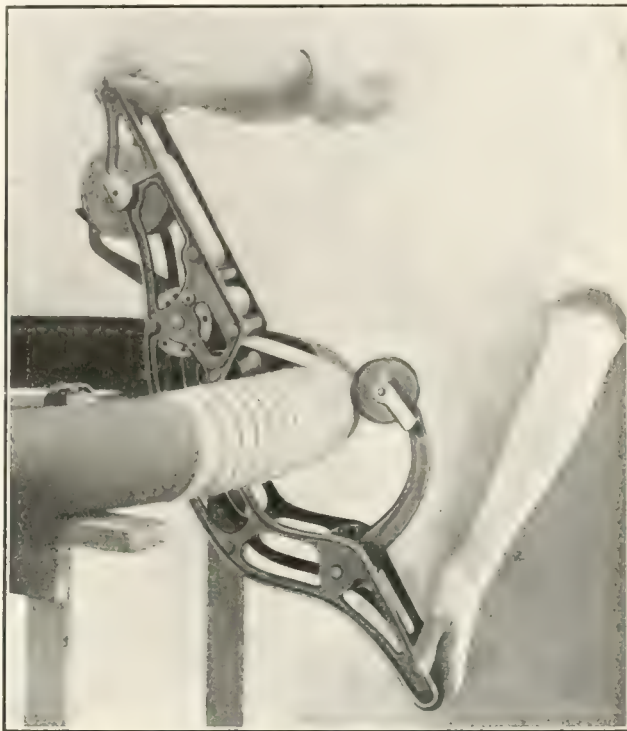
Mr. Geo. W. Watkinson, of the Standard Asphalt & Rubber Co., 185 Madison avenue, New York, has mailed out a large number of rubber stockings made from the famous "M. R. X."

The J. H. Day Co., manufacturers of rubber mill machinery, Cincinnati, Ohio, and The Federal Rubber Manufacturing Co.,

of Milwaukee, Wisconsin, distributed cards of Christmas greeting among their friends and patrons.

TIRE WRAPPER FOR REPAIR WORK

In the garage or repair shop the operation of retreading tires is usually performed by wrapping the tape around the tire by means of the hands alone. This requires skilled workmanship as well as considerable physical strength, and often results in uneven pressures being produced in different parts of the tire. The hand-operated winder shown in the accompanying illustration is claimed to overcome this difficulty. In operation, the wet bandage, tightly wound on its spool, is dropped into a recessed slot in the frame and the pressure



THE ROSSMAN TIRE WRAPPER.

arm is released against the bandage. A portion of the bandage is unwound and passed through the guides and once around the tire, establishing an overlap to secure the end. The tire is secured in a horizontal position, as shown, and the roller arm clasped around it. Then the machine is simply rotated, causing the bandage to be drawn from the spool and tightly wrapped around the tire. The average tire requires about three 20-yard bandages, depending upon the amount of overlap, which is regulated at will by the operator. The machine will wrap any tire from 2½ to 6 inches in size. In order that the tire be wrapped very tightly, it is necessary that the bandage itself be wound tightly upon its spindle; and to accomplish this result, a special winder has been designed, which stretches the bandage tightly around the spindle and passes it through water at the same time. [R. G. Rossman, Seattle, Washington.]

PROPOSALS FOR GOVERNMENT SUPPLIES.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will receive bids until January 6 for furnishing the following materials. Firms interested should make application to the Bureau of Supplies and Accounts, giving the schedule number desired: Schedule 6152, rubber fire hose, unlined linen fire hose, upper-deck fire hose, flexible metallic hose, garden hose, suction hose, wash-deck hose. Schedule 6154, flexible metallic hose, rubber hose. Report No. 1591.

New Machines and Appliances.

THE LATEST SLITTING AND REWINDING MACHINE.

THE slitting and rewinding of sheet rubber and rubber-coated fabrics is a process which increases in difficulty in proportion as the requirements call for accurate work. In most machines designed for this purpose, the problem of slitting the material has usually been considered as distinct

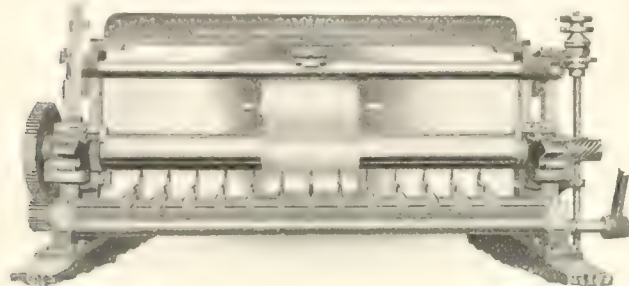


FIG. 1.—DETAIL OF CUTTING DISCS AND STEEL ROLLER.

from the problem of rewinding. In a new machine which has just been placed upon the market the rewinding device assists in the slitting of the material and the two units of the machine have been made inter-dependent.

Several innovations have been introduced in this machine, which has already been installed in a number of the prominent rubber factories. The most noteworthy feature is the device used to slit the material. Instead of using a pair of rotary

full width of the machine and may be raised or lowered by means of a cam *F* in order to bring the cutting wheels into or out of contact with the steel roller *G*. This roller is made of much harder material than the cutting wheels, in order that it may not be scored and thus require regrinding. The cutters *C* are arranged so that they may be easily removed for sharpening. In order that the cutters may be pressed against the roller *G* with some force and with a somewhat yielding pressure, a leaf spring *H* is attached at the rear end of each lever *D*, the opposite end of the spring being fastened to the frame of the machine.

The amount of pressure which may be brought to bear upon the material which is being rewound upon the shaft *B* may be controlled by a riding roller *K*. This roller extends the full width of the machine and its pressure upon the material is varied by means of counterweights suspended from cables attached to pinions which operate in racks secured to the bearings of the roller *K*. Fig. 2 shows this riding roller raised for convenience in threading the material onto the rewinding shaft. It will be noticed that the fabric passes under a swinging roller *L* which serves to put a tension upon the material before it reaches the cutters. The cutting wheels may be arranged in any manner and at any desired distance apart for forming rewound rolls of different widths. In case the fabric is not entirely cut through by the wheels *C* a series of seam-slipping blades *M* is arranged above the idle roller *N* so that the strips are separated before reaching the rewind-

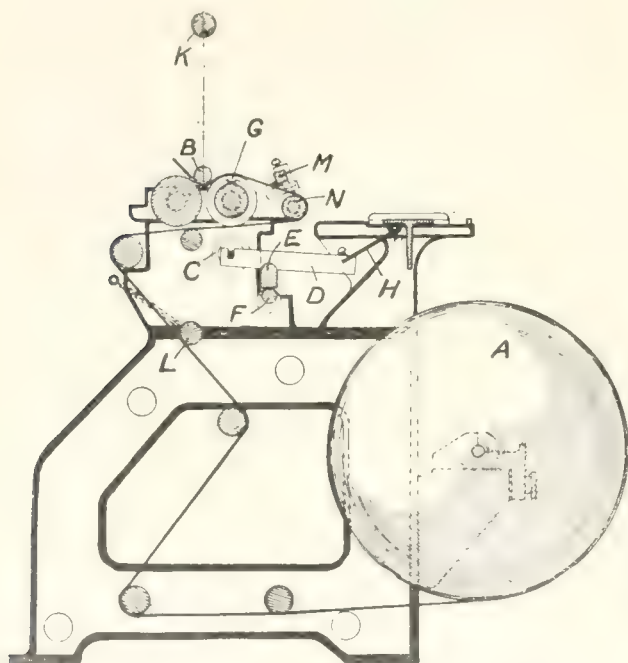


FIG. 2.—CAMERON MACHINE WITH CUTTING DISCS LOWERED.

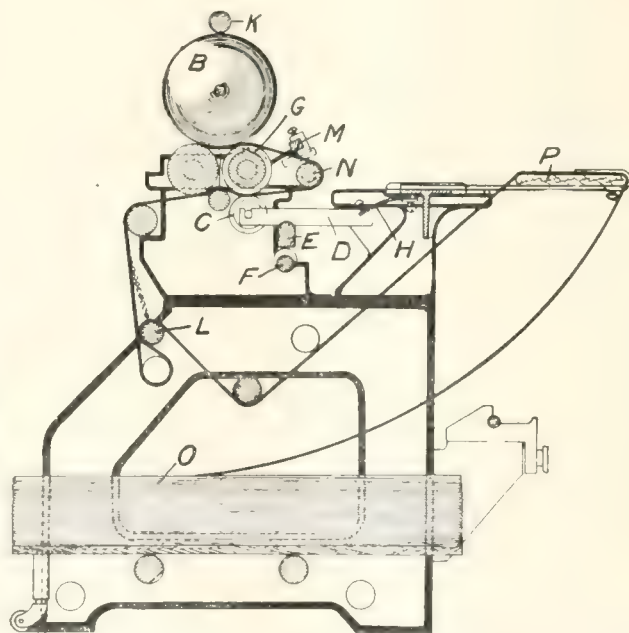


FIG. 3.—MACHINE WITH CUTTERS RAISED INTO SLITTING POSITION.

cutters which shear the material, the device used in this machine is called a "score cutter." Unlike the rotary shear, it does not actually cut through the material, but really presses through it against a steel roller. The V-shaped edge of the cutting wheel cleaves through the fabric the same as a chisel.

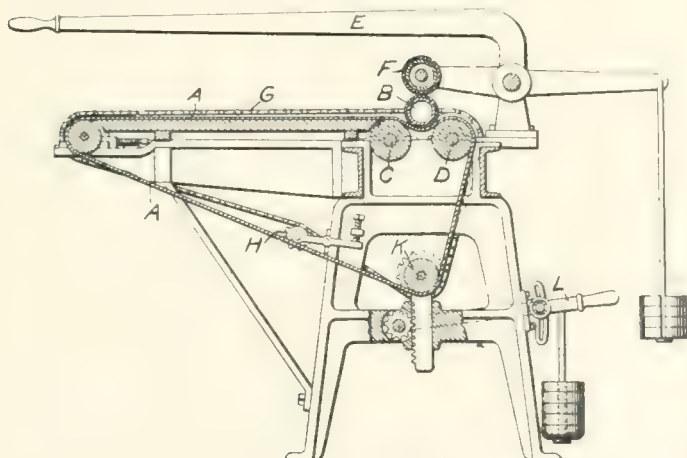
Referring to the drawings, Fig. 2 shows a roll of cloth *A* threaded in one of several possible ways to the rewinding shaft *B*. The cutting wheels *C* are pivoted in the end of levers *D* which rest upon a crossbar *E*. This bar extends the

ing shaft *B*. The construction of the cutting discs and of the steel roller *G* is seen in Fig. 1, which shows their arrangement in relation to the rewinding shaft. The latter is mounted in vertical guides which allow it to be raised as the diameter of the rewound rolls increases. Fig. 3 shows the cutting wheel in its raised position and shows the machine delivering fabric from flat folds *O* over a guide board *P* and finally on to the rewind shaft after passing between the cutters and the steel roller.

The rewound rolls sometimes have a tendency to become irregular and to bulge outwardly at the ends. In order to prevent this a number of adjustable fingers are arranged at one side of the rewinding shaft, so that the ends of the fingers rest upon the shaft and guide the material in a straight line as it is rewound. Like the cutting discs these fingers may be adjusted to accommodate strips of any width. [Cameron Machine Co., 57 Poplar street, Brooklyn, New York.]

NEW MACHINES FOR FORMING RUBBER TUBES.

A machine of new design, in which rubber tubes are built up over a floating mandril, is the subject of a recent patent. By reference to the drawings herewith the operation of this machine will be readily understood. A sheet of thin rubber, of much less thickness than the walls of the finished tube, is placed upon a web or carrier *A*. This web is made of felt so as to allow the passage of air through it and to prevent the rubber from sticking to it. The sheet of rubber is carried toward the rear of the machine and under the mandril *B* which floats between two rollers *C* and *D*. Since the surface of the mandril is smooth the rubber will adhere to it and be carried around as the rollers continue to revolve. The rubber is wrapped around the mandril until a tube of the desired thickness is formed. By means of the lever *E* the roller *F* is made to press down upon the rubber as it is wound upon the mandril, thus excluding all air bubbles from the tube. The carrier is driven by a chain *G* which is kept tightened by the adjustable idler gear *H*. In order to keep the mandril pressed up against the roller *F* the carrier *A* passes under a roller *K* which is held down by weights suspended from the lever *L*. As soon as the tube has been built up to the proper thickness the hand lever *E* is raised, which allows the mandril to travel to the rear of the machine, where the

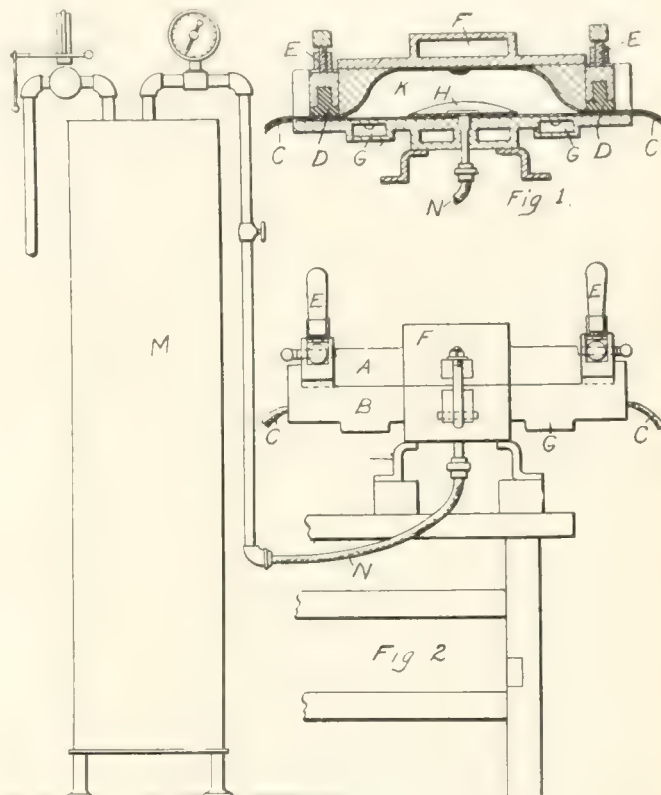


KREMER RUBBER TUBE MACHINE.

finished tube is removed. [U. S. Patent No. 1,078,099. F. W. Kremer.]

As a sequel to the tube building process described above, the inventor of that machine has also designed another machine for splicing the ends of rubber tubes, especially automobile tires, by the utilization of compressed air. Briefly, the process consists in clamping a short section of the tire in a mold so that the air is confined in a small space, the section of the tire in the mold including the ends to be spliced or vulcanized. Fig. 1 shows the mold in longitudinal section, while Fig. 2 shows an exterior view of the mold and the compressed air tank. The mold consists of two parts, *A* and *B* between which the two ends of the tire *C* are clamped. In order to form an air-tight chamber the ends of the upper part *A* are provided with rubber blocks *D* which press down upon the tube, these blocks being raised or lowered by the screws *E*. Surrounding the mold directly above the ends of the tube are steam jackets *F* and near the

ends of the mold are water jackets *G* into which cooling water is introduced. The tubes are spliced preferably at the point where the air valve is located in order that the ends of the tube and the rubber plate *H* of the valve may be vulcanized in one operation. When the tube has been clamped in position,



KREMER RUBBER TUBE SPLICER.

air is admitted under high pressure from the tank *M* into the space *K*, through the hose *N*, thus causing the tube to be held firmly against the walls of the vulcanizer, which are heated by the steam jacket. The cooling water prevents the vulcanization of any part of the tube except that near the ends to be spliced. [U. S. Patent No. 1,078,097. F. W. Kremer.]

MACHINE FOR RECLAMATION OF RUBBER WASTE

The machine illustrated in the accompanying drawing is designed for the purpose of reclaiming vulcanized rubber waste and for removing from the rubber the materials which have been mixed with it, such as the compounding ingredients, particles of fabric, etc. The process comprises the subjection of the rubber waste, after it has been cut into small particles, to the action of a reclaiming solution in the presence of heat, and simultaneously subjecting the rubber to the electrolytic action of an electric current.

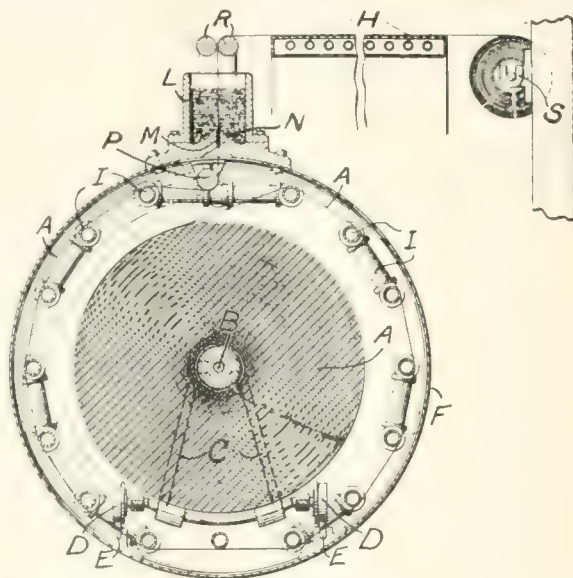
The apparatus comprises a cylinder *A* containing a tank *B*. The space between these two vessels forms a heating chamber which is supplied with steam through the inlet pipe *C*. In the lower end of the tank *B* is a funnel-shaped body *D* having a zinc cylinder *E* attached at its upper end. The lower end of this funnel is closed by a valve *F* which is operated by the lever *G*. In order to provide a means for circulating the materials through the tank, the pipe *H* extends from the lower part of the funnel *D*, out at the side of the tank, and around to the lower end at *I*. A propeller *J* operated by a pulley on the shaft *K* is inserted in the pipe *H* to force the circulation.

In carrying out the process a sufficient quantity of the 'waste material is placed in the tank to cover the pipe *H*, the valve *F*

being closed. The solution commonly used for each 100 pounds of rubber is 600 pounds of water, 21 pounds of sodium hydrate or potassium hydrate, and one pound of ferric sulphate. The solution is kept heated by steam surrounding the tank and is subjected to the action of an electric current supplied from a generator or battery *L*, one wire being insulated at *T* and attached to the zinc cylinder while the other is attached to any metal part of the apparatus, such as the cylinder at *W*. The steam is introduced under a pressure of from 95 to 160 pounds while the current supplied is about 800 amperes at 4.6 volts. The material is circulated through the pipe *H* by means of the propeller *J* so that the electric current acts upon every particle of the solution as it passes up around the zinc cylinder. This process is continued from 10 to 24 hours, after which the valve *F* is raised, allowing the solution to run down through the pipe *M* into the washing cylinder *N*. This washing tank is filled with hot water to remove the chemicals, especially the caustic alkalis. In order to assist in cleansing the rubber, steam is introduced from the pipe *O* surrounding the tank through the perforated pipes *P*. This agitates the solution and allows the rubber to sink to the bottom. The hollow screened body *Q* is then lowered into the solution above the rubber so that the waste water and chemicals are drained off through the pipe *R*. This washing process is repeated, fresh water being introduced through the pipe *V*, until all foreign materials are washed away

the fabric comes into contact with the external atmosphere. The fabric is also heated by means of steam coils at the same time that the air is exhausted so that it is in a perfectly dry condition when it reaches the rubber.

Referring to the drawing herewith, which shows a cross sec-



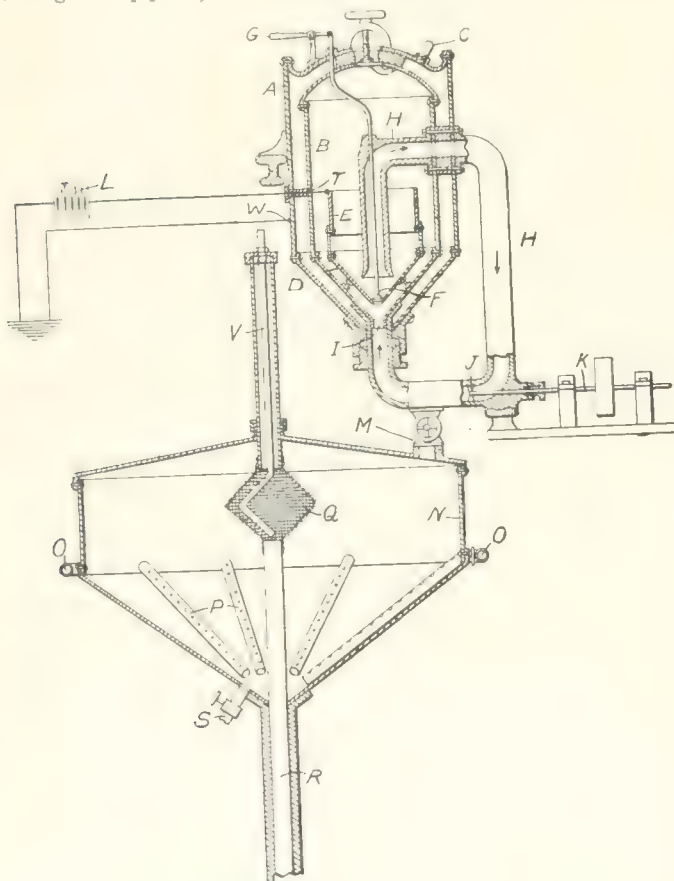
DESTRIBAT'S NEW VACUUM MACHINE FOR IMPREGNATING FABRICS.

tion looking toward the end of the machine, the roll of fabric *A* to be treated is mounted upon the shaft *B* in the frame *C*. This frame is set upon rollers *D*, which run upon a track *E* in the bottom of the cylinder *F*. This cylinder has a removable door to allow the roll of fabric to be run in and out of the cylinder. The air is exhausted from the cylinder by means of an ordinary vacuum pump. Surrounding the roll of fabric is a series of steam pipes *I* with inlet and outlet at the rear end of the cylinder. On top of the cylinder is a trough *L* provided with a long slot *M* and a pair of flaps *N*, which prevent the liquid rubber from being drawn into the cylinder when the air is exhausted.

A roll of fabric which is to be impregnated with rubber is placed in the frame *C* and run into the cylinder. The end of the cloth *A* is then carried around the steam pipes *I* and under the roller *P*, and then vertically through the slot *M* into the rubber. Before the cloth passes into the rubber, however, the air is exhausted from the cylinder and likewise from the interstices of the fabric, so that when the cloth enters the liquid rubber the latter will be drawn into the spaces between the threads and the cloth become thoroughly impregnated. The coated fabric then passes between a pair of rollers *R* and over a heater *H*, after which the coated and dried fabric is wound up on the roller *S*.

WESTERN CITIES PASS FENDER ORDINANCES.

A bill has recently been introduced in the city council of Cleveland, Ohio, providing for safety bumper equipment on all motor trucks operated in that city. In Detroit, Michigan, where a similar ordinance was passed some time ago, the police commissioner has extended the time of enforcement from December 1 to January 1, in view of the fact that "the truck fender business is still in its infancy and no perfect type of fender has yet been developed." Cleveland is much interested in the outcome of the Detroit enactment, Chicago is considering the adoption of a similar regulation, and other cities will no doubt take steps in the same direction in the near future; and a rubber bumper will probably be duly considered and adopted in the production of a "perfect type" of fender such as will meet the requirements of this new law, one of which is that the front bar of the fender shall not be more than six inches from the ground when in operation.



HELLER'S MACHINE FOR RECLAIMING WASTE RUBBER.

from the rubber, after which the pure water and rubber are allowed to run out through the pipe *S*. [U. S. Patent, Reissue No. 13,613. C. S. Heller.]

A NEW METHOD OF COATING FABRICS.

Among the newer machines designed for use in connection with the manufacture of rubber goods is one recently invented by Louis P. Destribats of Trenton, New Jersey. The object of the invention is to provide an improved means of exhausting the air from the fabric and coating the material with rubber before

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE illustrated article on Singapore as the rubber market of the future, given in the November issue of THE INDIA RUBBER WORLD, has been read with interest by manufacturers. The idea will probably not commend itself to certain important London interests, but manufacturers express the opinion that the change of venue would lead to a reduction of about 4d. per pound as compared with purchase in London. The London scheme for grading plantation rubber into four classes has been favorably received by the trade, uniformity of quality being the great desideratum. Fine Hard is always bought as such, without any samples being submitted and without any anxiety on the part of the buyer as to what the delivery will be like. At the present time plantation from this or that source is bought to sample, and strict watch is kept that the deliveries are equal to sample, especially when the market is against the rubber broker. Cases have occurred recently where later deliveries have been obviously inferior to sample and first deliveries, and the result has been rejection.

Perhaps there has been too great a tendency during the last year to put down anything that has gone wrong in the factory to inequalities in the plantation rubber. It is a suggestion that cannot easily be refuted and has the great advantage of absolving the factory management from blame. Contracts for delivery over next year are being made at several pence per pound advance on those which have lately ruled; which portends a better state of affairs for the plantation companies, unless they fail to deliver to sample and thus invite trouble. Some discussion has taken place in London as to the desirability of the regular publication of plantation yield statistics. Such information is certainly useful to the manufacturer and conduces more to his interests than to those of the plantation industry.

Turning to wild African rubber—the recent trend of the market has, of course, been all against its production and sale at a profit, a serious financial matter for many of the districts concerned. Sentiment is supposed to be dissociated from business but it is not altogether pleasant to read the speeches of the financial magnates of the planting industry, wherein the annihilation of the African rubber collection is set up as an important object to be achieved. Certainly there is another side to the question—that of the hardships suffered by the collectors in swamp and forest and the toll of human life exacted by the industry. This subject has been noticed in some of our prominent reviews and journals, but is too large to receive more than a bare reference here. From the manufacturer's point of view the shortage in the present supply of certain brands of Africans is a cause for regret, and this will have its baneful result in the future, the present tendency being to banish Africans from mixing formulæ because of the uncertainty of continuity in supplies. This is an important matter, as once a formula has proved satisfactory there is a strong disinclination to make any alteration in it.

This leads one naturally on to the question of reclaimed rubber. It might be thought that with plantation in the neighborhood of 2s. per pound the competition of reclaimed would practically cease. This, however, is not the case, tho it is quite probable that the reclaimers have suffered some reduction of business. The alteration of formulæ arises again here, and where a particular brand of reclaimed rubber has given satisfaction for years manufacturers are chary of replacing it by a mixture of plantation and mineral at the same price; and this mainly because they cannot foretell the course of the raw rubber market, and the exigencies of selling price of the goods may

at any time necessitate a return to the reclaimed, which may or may not be available. What is perhaps inevitable in the reclaiming industry is a somewhat lower range of prices, a matter which depends largely upon the scrap rubber dealers, who have persistently held out for higher prices than the state of the rubber market warranted. In view of the undoubted fact that some large manufacturers have reduced their purchases of reclaimed rubber, it is obviously necessary for scrap dealers to come into line with reclaimers if the latter have to reduce prices to keep business alive.

REFORMED RUBBER.

Four years ago, at the height of the rubber boom, the Premier Reforming Co., Limited, was brought out, the prospectus issued to the public containing testimonials to the value and importance of the process from men prominently connected with the scientific and manufacturing sides of the rubber industry. Now it has been found necessary to voluntarily wind up the company, preparatory to forming a new company in which the name Reforming does not appear. The new company—to be called the Headway Rubber Co.—is to be mainly concerned with the manufacture of a tire, presumably from new rubber. *Prima facie* this looks as if reformed rubber has not exactly come up to expectations. Altogether, however, there have been five or six companies making reformed rubber goods under one or another patent, and in the absence of any authoritative figures as to the business these companies have done or are doing, it would be unfair to jump to the conclusion that all reforming is a failure. That the claims made for the process as an epoch-making advance in the rubber industry were unduly exaggerated is a fact which can hardly be denied.

This fact, indeed, I think, is generally admitted; but this is not the same thing as saying that there is nothing at all in the process—or perhaps I ought to say processes. Leaving out of account the validity of the different patents—the master patent being claimed by the Simplex Rubber Co., Limited, of London—it is obvious to me that while some qualities of rubber may be suited for reforming other qualities are quite unsuitable and are incapable of competing with a new rubber mixing. I am not writing at random, because I have had under observation a reformed rubber article being used alongside one of new rubber of similar composition made at the same time. These goods have been in use for 2½ years and both are giving satisfaction.

LAWN TENNIS BALLS

Great Britain differs from the bulk of the countries of the world in that the popular game of lawn tennis is nearly always played on grass, and that the season is limited to the summer months. In most countries the hard court made in various ways is the rule. Now, however, there is a decided tendency to play the game all the year round on hard courts, and quite a number of the modern so-called "En-tout-cas" have been put down in the last year or two. The writer, as the recipient of a prize for the veterans' handicap at an open tournament last summer, is playing assiduously through the winter for the first time, in the hope of further triumphs, and he has noticed that many other players of advanced age are taking the opportunity of getting some really good exercise. This by way of an exordium to the statement that there is likely to be a growing demand for lawn tennis balls in the winter in England.

Different ideas prevail as to the most suitable ball for hard courts, but at any rate at the not unimportant club with which I am connected play has been carried on with the ordinary

Shoer's match ball as used in the summer on grass courts. Shareholders in rubber plantations seem to think that the erstwhile shilling ball ought to be obtainable now at about sixpence. Personally, as knowing a little something about the manufacture, I am not looking forward to any such sweeping reduction, all the more as there is a working agreement as to prices between the British and Continental manufacturers. Hard court play certainly takes more out of the balls and also out of rubber-soled shoes than does grass play—which is, of course, to the benefit of the makers thereof. The hemp-soled canvas tennis shoes so largely used on the Continent are very little in evidence in England on hard courts, no doubt because players like to stick to the same outfit all the year round.

PERSONAL MENTION

Mr. John Sykes, chairman of the Card Clothing Manufacturers' Association and head of the Lindley branch works, has been presented with the freedom of Huddersfield. The conferring of the freedom of English towns is a rare event and I believe that this is only the second time that the honor has been conferred at Huddersfield.

Mr. H. S. Walker, manager of the rubber and balata departments at the Rochdale asbestos mills of Messrs. Turner Bros., Limited, who met with a very serious accident at the works early in last year, is now, I am glad to be able to say, back at business, and there is every prospect of a permanent recovery from his disablement.

The directors of the Mersey Reclaiming Co., Limited, of Stockport, having definitely decided not to recommence business after the fire of last year, the late manager, Mr. G. Gray, is, I understand, open for a similar post. At one time connected with the Dunlop works at Birmingham, Mr. Gray subsequently went to America, where he was concerned with reclaiming, and may therefore be considered to have an all-round knowledge of this subject.

Mr. Eccles, at one time manager of the Liverpool Rubber Co., and afterwards of Messrs. F. Reddaway & Co., Limited, is now back with the latter firm, in the position of commercial manager. The works manager is Dr. Thiel, who had been previously at Messrs. Reddaway's before going to the Calmon works at Hamburg. Change of personnel is by no means uncommon in our rubber works, but it is rare for a man to return to a works he has left.

THE LONDON RUBBER SHOW OF 1914.

As already mentioned in the columns of this publication, an International Rubber and Allied Industries Exhibition will be held in Royal Agricultural Hall, London, for two weeks, from June 24 to July 9, 1914. Over thirty-five British and foreign governments have already decided to take part officially in this exposition. It is under the management of Mr. A. Staines Manders, very well known to all the American rubber trade by reason of the Rubber Exposition held in September and October, 1912, in New York City, which he organized. This London show, to be held next June, will be Mr. Manders' fourth international rubber exposition, and he promises that it will be by far the best of them all. The Rubber Conference held in conjunction with this exposition will begin June 30 with Dr. Joseph Torrey, the well-known writer on rubber subjects, as chairman.

HECHT BROS. BECOME ALCAN & CIE.

The retirement of Mr. Ernest Hecht from the firm of Hecht, Frères & Cie, crude rubber dealers at 75, rue St. Lazare, Paris, France, has made it necessary, in conformity to the French law, to change the name of the concern, and it will hereafter be known as Alcan & Cie, Mr. Alcan having been a partner in the company for many of the sixty years of its existence. The business will continue in every way as before.

AMERICAN ASSOCIATION OF COMMERCE AND TRADE, BERLIN.

The eleventh annual general meeting of the above-named association held on November 29, was the fourth consecutive occasion on which President I. Wolff, Jr., has acted in that capacity. He was re-elected to that office for the coming year, Herr Richard Sierling being chosen as treasurer. In the president's address reference was made to the new American tariff and its prospective effects as well as to the share of the association in its preparation. Postal reform between the United States and Germany had likewise been advocated with the view of letters posted in Berlin on Fridays catching the English steamers on Saturdays. As usual, the report of the secretary, Professor George S. Atwood, is full of information as to the doings of the association. It refers specially to the proposed establishment of a Bureau of Publicity in the interest of American manufacturers. The reports of the standing committees contain full details of the work done in the various sections during the year 1913, which was among the most active in the records of the association.

TRADE NEWS NOTES.

An official invitation to take part in the International Rubber Congress and Exhibition to be held in Batavia, Java, September 8 to October 10, 1914, has been extended to the United States and the Philippines, through the Legation of the Netherlands at Washington.

The imports of raw and waste rubber into Moscow, Russia, for the first half of 1913 amounted to \$11,264,000, representing a gain of \$2,685,500 over the imports for the same period in 1912. The rubber waste exports from Moscow to the United States for the first six months of 1913 amounted to \$10,314, or \$11,548, less than those of the corresponding six months of 1912.

The total commerce of Belgium in rubber for the year 1912 was \$50,342,175, of which imports and exports represented respectively \$27,776,805 and \$22,565,370.

According to the report of Consul P. Emerson Taylor, located at Port of Spain, the total area devoted to rubber in Trinidad has been increased from 2,000 acres in 1910-11 to 2,900 acres in 1911-12.

RUBBER OUTPUT FROM THE FEDERATED MALAY STATES.

According to information cabled by the Federated Malay States Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of November amounted to 4,618,880 pounds, as compared with 4,838,400 pounds in October; making the total for the eleven months of the present year 46,697,569 pounds, as compared with 31,038,486 pounds for the corresponding period last year.

Appended are the comparative statistics for 1911 and 1912:

	1911.	1912.	1913.
January	1,329,170	2,730,576	4,772,880
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
April	1,235,917	2,285,390	3,642,240
May	1,147,488	2,255,034	2,744,000
June	1,229,754	2,305,915	4,491,200
July	1,581,993	2,695,861	3,989,440
August	1,651,845	3,655,535	5,293,120
September	1,677,062	2,968,121	4,480,000
October	2,182,857	3,215,231	4,838,400
November	2,104,317	3,121,473	4,618,880
Total	17,547,471	31,038,486	46,697,569

PARA RUBBER CULTURE IN DUTCH GUIANA.

By a Resident Correspondent

AS the area of Pará rubber culture increases in Dutch Guiana at the rate of many thousand trees a year, the question arises: Will not the supply so far surpass the demand that the



TWO-YEAR OLD PARA TREES ON A SURINAM PLANTATION

price which is now so low will fall below the profit-giving line?

As the soil in Surinam is well adapted to rubber culture, and as rubber can be produced so cheaply in the colony, there is little to fear if the field of consumption increases throughout the world. It would seem that there is no valid cause for alarm among those who are interested in rubber plantations in the colonies which have been started right and are managed right.

The uses of rubber are daily becoming so varied that the supply must constantly and largely increase in order to meet the demand. The field for the use of Pará rubber seems to



TAPPING SEVEN-YEAR-OLD PARA TREES ON A SURINAM PLANTATION

have no limit, and the money put into sound rubber enterprises by companies and individuals, who are cultivating it with care and good management combined with sound business principles, is well invested.

In Surinam, however, the Pará rubber industry can be said to be practically in the nursery stage, for the reason that twelve

or fifteen years ago, when other tropical countries with suitable soil conditions were cultivating largely, Dutch Guiana was yet asleep. This shortsighted policy on the part of the planters and others is one of the main reasons why the colony's rubber culture is so backward. Capital would certainly have found its way to Dutch Guiana if the colony, in 1910-11, when the rubber craze was at its highest, had had something to offer.

Dutch Guiana's harvest is yet to come, and the plantations which today could be operated have to face another problem—which, however, is not so serious—skilled labor for tapping the trees.

It is deplorable that the Dutch in Surinam are such procrastinators. Those in the Far East, however, display more energy and more go-aheadness, with a touch of the American "get up" which accounts for their superiority over their brothers in Dutch Guiana in matters of business.

In connection with skilled labor, the plantations will have to face this problem in a very short time. The Javanese and others who are conversant with the methods of tapping the rubber tree are few and far between and, as natural, their services are in great demand. To thoroughly operate a plantation, with many thousand trees, will therefore be a difficult matter when only a very few tappers can be procured. This, however, will right itself in time, for the Javanese is intelligent and takes kindly to this business. Today, those estates that are ready for



JAVANESE RUBBER TAPPERS IN DUTCH GUIANA

tapping operations can be compared with an army of soldiers armed with up-to-date rifles but minus ammunition. This we believe is responsible in a great measure for the small production of rubber by the colony so far.

It is estimated that only a very small portion of the possible rubber supply of Dutch Guiana has ever been gathered. If this is true, there are several thousand kilos of Pará rubber to be gathered from the plantations, which could be taken out each year.

AN APPEAL TO THE STOCKHOLDERS.

At the last annual meeting of the Port Dickson-Lukut (F. M. S.) Rubber Estates, the chairman, Sir Wm. Hood Treacher, said:

"This beautiful virgin plantation rubber, which is grown on British soil and with British money, gets the price of 1s. per pound lower than the hard Para, which is grown on foreign soil and exploited principally by foreign money, and which contains 25 per cent. of water and other useless matter. Some of the magnates of the rubber-producing world are putting their heads together and trying to formulate some method by which we may be delivered from the house of bondage of the auction-sale system, and get into closer touch with the manufacturer, the actual user of the rubber. I should advise all the shareholders of this and other companies to support their directors who are working in this direction, and to apply the whip and the spur to those who hold back and trust entirely to Providence."

RUBBER NOTES FROM BRITISH GUIANA.

Our Kaituma Correspondent

THE most important event that has happened since I last wrote is the return of the Governor, Sir Walter Egerton, K. C. M. G., from his journey through the *hinterland* of this colony, made with the object of ascertaining the possibility of developing the country by means of a railroad. His Excellency went through the bush, across the Rupununi savannahs, as far as the Brazilian frontier, and he and all the members of his party (which included a railway engineer named Bland, in the employ of the Nigeria government, Dr. K. S. Wise, government bacteriologist, and Mr. W. C. Anderson, forestry officer), returned looking all the better for their experience. His Excellency has returned full of enthusiasm. In the course of an interview he said that the savannahs could support an enormous quantity of cattle, and those he saw up there he described as being very fat and in excellent condition. "I see no reason," he added, "why almost any tropical product should not be grown there with success. But it is no use growing anything there at present because of lack of means for transporting the produce to market. Settlers must have cheap means of communication with the coast." Subsequently he made a more considered pronouncement in the Combined Court, which was slightly more qualified but not less enthusiastic. I quote his remarks under this head in part. He said:

"I have just returned from a memorable journey through the interior of the colony up to the Brazilian boundary on the Takutu river. I was fortunate in being able to travel with Mr. Bland, the railway engineer brought here to examine into the best route for and the probable cost of building a railway through our magnificent timber forests to give cheap and rapid connection with the savannahs and with the Brazilian Province of Amazonas."

"I was much impressed with the wealth of greenheart and other timber that would be brought within reach in the forest region by such a railway and by the large area of fertile land there awaiting the tropical agriculturist; but it is doubtless in the great savannah plains that the most rapid development will take place if the 'transport-to-coast' problem is ever solved. There are said to be some 9,000 head of cattle on the savannahs. They are lost in the vast area, and I believe the calculation that three-quarters of a million might find grazing thereon is a reasonable estimate. I also believe that large areas of those savannahs are very suitable for agricultural and mechanical tillage."

"Cattle, sheep and horses thrive. The cattle are large, healthy beasts in good condition and furnish excellent meat. The sheep are small and of inferior breed. The horses are small, and are more properly ponies, but they are capable of an astonishing amount of work. The remarkable thing is that during long years of great prosperity in this colony no attempt was made to open up this rich southern country. I confess that I can see no way of doing this except by a railway."

Not less important are the views expressed by Mr. Bland in the course of an interview. His report has not yet been published and naturally he was a little reticent; nevertheless, his statements are of great importance. He said that there are no very great difficulties in getting a railway to the Rupununi savannahs—there would be no bridging difficulties to encounter and black labor could be imported from the West Indian Islands; that there are great possibilities in the country, the timber resources of which alone would prove a reliable asset; and if the country is to go ahead a railway will have to be built.

These, in brief, are the views of the engineer. Their importance, as they affect the future development of the balata industry, cannot be exaggerated. The recent fall in the price of balata (and this is most marked in the New York market, according to our daily cable advices, which quote balata in that

market at 50 cents per pound) is greatly hampering the industry. The expense of dispatching an expedition to the savannahs is enormous and at present prices can yield only a very small profit, if any at all. The superintendent of Garnett's Balata Station on the Rupununi states that it takes him twenty days to get to his station, and he takes with him sixteen hands, besides a bowman and captain. He averages the cost at \$400. The difficulties with which the balata industry has to contend under these circumstances can readily be understood. The construction of a railway could not fail to enormously reduce these traveling expenses and to insure the commercial success of balata exportation. It will not be forgotten by some of your readers, perhaps, that I drew attention some months ago to the possibility of growing Ceará rubber on these Rupununi savannahs, providing there were some effective means of transport to the coast.

The annual report of the Institute of Mines and Forests for 1912-13 has just been published. The report states that in the past twelve months "there has been much progress made with the rubber plantations, and the highest authorities here are now quite satisfied that the cultivation of *Hevea Brasiliensis* has reached a stage warranting the belief that results will be reached equalling anything obtained in the Far East. Tapping of this species gave most encouraging results. With large areas suited to the cultivation of rubber all over the colony, it is not too much to expect that greater attention will be given to, and more capital expended on, increasing the area devoted to this purpose." The Institute states that there are 9,000,000 acres of easily accessible Crown lands suitable for rubber cultivation which can be leased from the government on most favorable terms, but it points out that only 2,000 acres are now planted with rubber, by far the greater area being in *Hevea Brasiliensis*.

With regard to the balata industry, the report states that the outlook is very promising. "Employers have not been victimized by unprincipled laborers to the same extent as was the case last year. This is one of the beneficial results of employers combining to give a fixed amount and no more by way of advance, and the refusing of employment to those who had given much trouble in past years by absconding and in other ways. Combining did away with much of the reckless competition to secure labor, which condition of things was taken advantage of by the dishonest laborers. The result of the combination to deal with labor in a settled way has shown clearly what had often been alleged, viz., that there were sufficient good men to supply the wants of employers and therefore no occasion for extra inducements to be offered to get the labor wanted." The exports of balata this year are nearly double those of last year, and the fact that this has been obtained by fewer companies is evidence of the improvement in labor conditions. If it were not for the falling prices the balata industry would at the present time be in a very healthy condition. As I have already pointed out, however, in the absence of adequate transport facilities, journeys to the far interior, with balata selling at 50 cents per pound, cannot be very profitable.

SPECIAL BOXES FOR PACKING RUBBER.

There has been a great deal of complaint among dealers and manufacturers because of the improper packing of much of the rubber shipped from the plantations, the rubber being forwarded in all sorts of cases—many of them rough on the inside so that splints of wood become imbedded in the sheets and biscuits. To meet the situation the Acme Tea Chest Co., Limited, of Glasgow, is manufacturing a packing box especially for rubber. It is of standard size, 24 x 19 x 19 inches and holds 200 pounds. The inside of the box is smooth so that the rubber comes out in a clean block. These boxes are shipped to the planters flat and are so constructed that they can be put together with very little effort and in a few minutes' time. They are kept in stock at several different points in the planting countries.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

THE INDIA RUBBER WORLD, THE PATENT OFFICE, LONDON, HAS THE HONOR TO ANNOUNCE THAT THE FOLLOWING ARE THE PATENT SPECIFICATIONS PUBLISHED IN THE PATENT OFFICE JOURNAL, NOVEMBER 19, 1913.

*Denotes Patents for American Inventions.

ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 5, 1913.]

- 16,112 (1912). Tire attachments to rims. T. K. Clark, Wentworth, Durban, Natal.
- 16,129 (1912). Spring wheel with rubber tire. W. G. Brookes, Holmwood, St. Cross Estate, Farnham, Surrey.
- 16,144 (1912). Telephone conducting plugs separated by insulation. M. B. Richter, 32 Norrebrogade, Copenhagen.
- 16,280 (1912). Spring wheels with continuous outer rigid ring and pneumatic rubber ring. C. E. Moser, 14 Rue Thiers, Boulogne-sur-Seine, France.
- 16,327 (1912). Printing stamps. A. Douard, Langley Bottom, Epsom, Surrey.
- 16,352 (1912). Treating rubber latex. S. C. Davidson, Sirocco Engineering Works, Belfast.
- 16,451 (1912). Rubber middlesole and heel cushion for boots and shoes. C. W. Johnson, 170 Hatherley Gardens, East Ham, London.
- 16,480 (1912). Elastic finger exercising apparatus. C. D. Kubicki, 13 Rue Campagne Première, Paris.
- 16,491 (1912). Football case made from rubber fabric. M. Fecht, 8 Leipzigerstrasse, Dresden, Germany.
- 16,524 (1912). Rubber blocks used in match packing. Bryant & May, Fairfield Works, Bow, London.
- 16,579 (1912). Rubber pad for use in letter copying books. A. D. Klaber, 5 Holborn, London.
- *16,587 (1912). Rubber band for maintaining in position ribs of parasols. J. Rose, Lime street, Lancaster, Pa., U. S. A.
- 16,590 (1912). Attachment for securing elastic tracks to inner rims. H. M. Ambler, 4908 Germantown avenue, Philadelphia, Pa., U. S. A.
- 16,607 (1912). Tire attachments to rims. E. Laurent, 16 Rue Cesar Bertholon, Saint Etienne, Loire, France.
- 16,627 (1912). Rubber tubing used to prevent trapping of the fingers and to exclude draught, in vehicle doors. J. Bentley, 24 Bank Crest, Baildon, Yorkshire.
- 16,660 (1912). Tire casing of rubber encased fabric strips. J. T. Johnson and F. G. Mason, "Lindamere," Wanda Road, Caulfield, Victoria, Australia.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 12, 1913.]

- 16,731 (1912). Rubber liner for reservoir pens. H. Kaufman, 90 Milton street, London.
- 16,758 (1912). Electro-therapeutic appliances. G. Wilson and C. J. Wilson, 1 Preston street, Brighton.
- 16,760 (1912). Tire attachments to rims. J. H. Stafford, 76 Lytham Road, and S. Stafford, Hyde Road, South Shore, both in Blackpool.
- 16,803 (1912). Carriages with rubber cushioned seats. C. Critchley Salmonson, "West Down," Bradworthy, Devon.
- 16,811 (1912). Spring wheels for vehicles. A. Victor, 4 Neudorferstrasse, Wiesbaden, Germany.
- 16,869 (1912). Spring wheels with soft tread, continuous outer rigid ring and helical springs. A. A. S. Williams, The Bungalow, Kingston Hill, Norbiton, Kingston, Surrey.
- 16,889 (1912). Tire inflating valves. W. Loebinger, 133 Grosvenor Road, Highbury, London.
- 16,900 (1912). Tire attachments to rims; non-metallic elastic tire bodies and cores. W. Edgell, Westfield House, and A. T. Edgell, Redfield Road—both in Midsomer Norton, Somerset.
- 16,930 (1912). Tire wrapping machines. J. Liddle, 154 St. Vincent street, Glasgow.
- 16,939 (1912). Detachable rim attachments to wheels. J. E. Wild, 27 Ruth street, Bolton.
- 16,977 (1912). Rubber impregnated hydraulic and like packing. J. Walker & Co., and J. Walker, Lion Works, Garford street, Poplar, London.
- 16,993 (1912). Machine for gumming, folding and perforating letter cards—comprising a rubber covered plate. J. E. Dorman and W. H. Dorman & Co., 45, Foregate street, Stafford.
- 17,071 (1912). Caoutchouc substances. Ges. fur Teerverwertung, Duisburg-Meiderich, Germany.
- 17,087 (1912). India rubber pad for vulcanite chin rest of violin. R. A. Stanley, 86 George street, Moss Side, Manchester.
- 17,119 (1912). Elastic tapes to replace corset lacings. W. Mackenzie, Warwick street, Hulme, Manchester.
- *17,127 (1912). A combined vibratory and suction massage appliance. J. Birrell and W. Birrell, 1319 Denney Way, Seattle, Wash., U. S. A.
- 17,144 (1912). Braces for personal wear. P. Meier, 15a Frohngartenstrasse, St. Gallen, Switzerland.
- 17,150 (1912). Feeding bottles. P. Wisotzky, 45 Schiesshausstrasse, Darmstadt, Germany.
- 17,152 (1912). Coin freed apparatus comprising rubber bulb and disc. L. Bauer, 114 Albertinerstrasse, Lindenau, Leipsic, Germany, and A. Ficker, 2 Newman street, London.
- 17,170 (1912). Sole for bedroom slipper with rubber stiffening strip attached at heel. J. L. Verp, Victor Works, Atherstone.
- 17,173 (1912). Vulcanizers. W. Frost and H. Frost & Co., 30 Great Eastern street, London.

- 17,199 (1912). A device for printing on glass, china, etc., by means of a number of india rubber stamps. F. I. Gibbs, Ivydene, Frederick Road, Selly Oak, Birmingham.
- 17,217 (1912). Elastic tires. G. Morandi, 5 Via Pescioni, Florence, Italy.
- 17,223 (1912). Lamp black. Lampblack, Ltd., 3 Mumford Court, Milk street, and W. D. Menzies, 5 Guybon avenue, Herne Hill—both in London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 19, 1913.]

- 17,251 (1912). A boot or shoe sole having studs or knobs of india rubber mounted on a backing of the same material. G. W. Paine, 11 Grove Road, Windsor.
- 17,270 (1912). Block paving with rubber slabs attached to upper surfaces of blocks. M. M. Dessau, 60 London Wall, London.
- 17,288 (1912). Hard rubber cap for front end of loom shuttle. (W. B. Baker and E. B. Baker, Richmond street, and F. Livesey, The Bungalow, Fulwood—both in Preston, Lancashire.
- 17,385 (1912). Rubber in cinematography, etc. C. Dupont, Rue de la Cerisaie, Charenton, Seine, France.
- 17,406 (1912). A contrivance for supporting a latex collecting vessel. A. Macnab, Balvelachlan, Callander, Perthshire.
- 17,413 (1912). Bandages for plants. W. Poenicke, 1b Chausseenstrasse, Delitzsch, Germany.
- 17,420 (1912). Golf practising appliances. W. Heggie, 11 George Quay, Dublin.
- *17,423 (1912). Tread bands, projections and surfaces for wheel tires. A. Libert, Green Bay, and A. Dewarzegars, Brussels—both in Wisconsin, U. S. A.
- 17,429 (1912). India rubber ring to prevent rattling of carbide container in acetylene production. J. F. Byrne and Howes & Burley, Bishop street, Birmingham.
- 17,455 (1912). Detachable rim attachments to wheels. L. E. Laisne, 39 Boulevard Jeanne d'Arc, Douai, Nord, France.
- 17,463 (1912). An india rubber or like countersunk tip for boots and shoes. A. R. Huskisson, Woodleigh, Queen Victoria Road, Blackpool, Lancashire.
- 17,528 (1912). The cylindrical rollers of a roller bearing made of solid vulcanite. E. Jones, Broomfield House, Perry Bars, Staffordshire, and Lynoch, Ltd., Lion Works, Witton, Birmingham.
- 17,549 (1912). Press with rubber mattress for making compound glass sheets. E. Benedictus, 25 Rue Fourcroy, Paris.
- 17,564 (1912). Tires of rubber, formed with grooves and beads and with non-extensible covers. P. E. Wedemeyer, "Glenafon," Abbey Road, Llangollen, Denbighshire.
- 17,586 (1912). Vulcanizing tires. A. W. Gislav, Gislaved, Sweden.
- 17,589 (1912). Sprine wheels with continuous outer rigid ring and helical springs and pneumatic cushions. T. H. Holroyd, 41 West Hill Road, Southfields, London.
- *17,592 (1912). Pessaries. R. Jentzsch, corner Madison and Western streets, Chicago, Ill., U. S. A.
- 17,600 (1912). A trap attachment for poultry nest boxes which is provided with an elastic supported signaling device. J. Street, 133 High street, Caxton, Sussex.
- 17,630 (1912). Golf practising appliances. B. C. Quill, Ballycarty, Tralee, County Kerry.
- 17,639 (1912). Braces for personal wear. E. Suss, 10 Tal, Munich, and A. Gross, Pfaffenhofen-on-Ilm, Bavaria—both in Germany.
- *17,644 (1912). Air tubes and chambers for wheel tires. E. Weil, Whitney Central Bldg., New Orleans, La., U. S. A.
- *17,657 (1912). Spring wheels with continuous outer rigid ring and pneumatic rubber ring, and like cushions. G. E. Starn, Camden, N. J., U. S. A.
- 17,662 (1912). Air tubes and chambers for wheel tires. W. E. Lake, 7 Southampton Bldgs., London.
- *17,667 (1912). Treating rubber. D. Spence, W. F. Russell and Diamond Rubber Co.—all of Akron, Ohio, U. S. A.
- 17,673 (1912). Carton making machines with rubber shoe feeds. A. Parr, 6 High View Park Gardens, West Norwood, and J. Wall, 61 Hailsham avenue, Streatham—both in London.
- 17,679 (1912). A pneumatic tire or an inner tube for a tire having a number of separately inflatable compartments. W. E. Lake, 7 Southampton Bldgs., London.
- *17,681 (1912). Spring wheels. E. Kreh, P. O. Box 3, Mare Island, Cal., U. S. A.
- *17,696 (1912). Spring core with outer cover, protected by rubber or like packing, for wheel tire. N. McQueen, Ludowici, Ga., U. S. A.
- 17,753 (1912). Diving helmet made of pliable waterproof material. H. & B. Drager, 53 Moisliger Allee, Lubeck, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, NOVEMBER 26, 1913.]

- 17,830 (1912). Coloring caoutchouc, etc. P. A. Newton, 6 Brems Bldgs., Chancery Lane, London.
- 17,864 (1912). Rubber insulated boots and shoes for electricians. J. H. C. B. King and St. Helens Cable & Rubber Co., Arpley, Warrington.
- 17,905 (1912). A device for banding rubber. H. Vign, 98 Prinzregentenstrasse, Wilmersdorf, Berlin.
- 17,980 (1912). Electric resistance plates contained in metal tube with insulated lining. J. Rootaam, and Ferranti, Ltd., Holinwood, Lancashire.
- 17,992 (1912). Detachable rim for wheels. C. Kindscherf, 1 Gobenstrasse, Hanover, and Continental Caoutchouc und Gutta Percha Cie, Hanover—both in Germany.
- 18,028 (1912). An elastic band shoe or slipper fastener. E. R. Pantou, Cliff House, East Cliff, Bournemouth.

- 18,049 (1912). Latex splender. W. Edge, Harwood street, Blackburn, Lancashire.
- 18,083 (1912). Hot mulling press with rubber press bag. A. Turner and W. J. Turner, at Turner, Atherton & Co., Ashton Road, Denton, near Manchester.
- 18,081 (1912). Non-metallic elastic tire bodies and cores. H. B. Clayton, Longton Grove, Sydenham, London.
- 18,084 (1912). Spring wheels with continuous outer rigid ring and helical and volute springs. V. Kochel, Prinz Ludwig Strasse, Freising, Germany.
- 18,104 (1912). Non-metallic elastic tire bodies and cores. C. Schragin, 22 Johannisstrasse, Berlin.
- 18,139 (1912). A process for producing models for galvanoplastic reproduction which embodies the use of a rubber covered skeleton frame. R. Lowy, 60 Zieglerstrasse, Vienna.
- 18,250 (1912). Air pumps for inflating motor tires. G. Rigal, 1 Passage d'Iena, Levallois-Perret, Seine, France.
- 18,253 (1912). Balloon fabrics. E. C. R. Marks, 57 Lincoln's Inn Fields, London.
- 18,271 (1912). India rubber massage glove. W. Goy, 61 Frankenallee, Frankfurt-on-the-Main, Germany.
- 18,277 (1912). Chewing gum prepared from gum dammar, the resin remaining after extraction of the india-rubber from Guayule and like rubbers. R. B. Ransford, 24 Southampton Buildings, London.
- 18,294 (1912). Marine life saving appliances. H. Denayer, 22 Rue des Rentiers, Brussels.
- 18,337 (1912). A chemise provided with a waterproof apron. L. Kauffmann, 5 Rue Pierre-Chausson, Paris.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 457,489 (May 6, 1913). E. Pochat. Improvements in appliances for strengthening the covers of pneumatic tires.
- 457,527 (May 6). S. Sauernerheimer. Elastic tire for motor vehicles.
- 457,678 (May 9). F. E. Cooper. Improved mudguard for vehicle wheels.
- 457,698 (May 9). J. Zöttl and F. Zöttl. Wheel tire.
- 457,702 (May 9). B. Sohlmann. Pneumatic tire.
- 457,711 (May 9). H. E. Morgan. Air chamber for pneumatic tires.
- 457,729 (May 10). Baudon. Elastic wheel for all vehicles.
- 457,818 (April 5). F. Boulon. Arrangement and adjustment of rotating wheels.
- 457,908 (May 14). W. E. Robertson. Improvements in vehicle wheels.
- 457,920 (July 24, 1912). A. Caubet and P. Gounon. Artificial gutta percha, with insulating properties superior to those of natural gutta percha, for electrical applications.
- 458,079 (May 20, 1913). J. G. Moomy. Process for manufacture of pieces intended for the repair of rubber articles.
- 458,115 (January 9). C. Hallé. Improvements in pneumatic tires.
- 458,181 (May 16). E. E. Marinier. Rubber pocket, with movable cover, in any material, to hold brush, sponge, etc.
- 458,216 (May 21). Mathews, Strange & Bliss. Improvements in the manufacture and preparation of rubber, or of analogous substances.
- 458,244 (May 22). M. F. Heyer. Improvements in eraser rubber.
- 458,287 (May 23). G. Marshall. Improvements in pneumatic and other tires.
- 458,395 (May 27). M. Cornet. Improvements in pneumatic tires.
- 458,671 (June 2). L. Romano. Improved demountable rim for vehicle wheels.
- 458,855 (June 2). Wilson & Marshall. Improvements in methods of inflating pneumatic tires for automobiles and other vehicles.
- 458,986 (June 9). H. Colloseus. Process of extracting rubber, gutta percha, balata, etc., from latex.
- 459,008 (May 7). Bartlett & Smith. Pneumatic vehicle tires.
- 459,005 (May 5). Badische Anilin und Soda Fabrik. Process for production of substances analogous to rubber.
- 459,134 (June 3). F. E. Matthews. Improvements in the preparation of rubber and of analogous substances.
- 459,163 (June 12). S. Goldreich. Process and machine for the easy removal of the non-lactiferous parts from the bark of *Landolphia* vines, and other descriptions of rubber plants.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

- 67,509, Class 3b (December 29, 1913). Machine for inserting rubber disks into rubber tires, etc. Vulkanische Werke, Wiesbaden.
- 67,941, Class 3b (December 28, 1913). Process for manufacture of products resembling soft rubber. Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen.
- 67,948, Class 3b (April 13, 1913). Belt fastener. Chausson-Düssler, Nordlingen.
- 267,993, Class 3b (December 29, 1912). Process for regenerating rubber. Dr. Carl Harries, Kiel.
- 267,994, Class 3b (December 29, 1912). Process for regenerating rubber. Dr. Carl Harries, Kiel.
- 68,027, Class 3b (March 9, 1914). Process and machine for obtaining rubber from barks and other portions of plants. Fritz Kempter, Heinestrasse 10, Stuttgart.

- 68,071, Class 30b (June 7, 1912). Appliance for fastening soft rubber disks in the manufacture of suction chambers. K. J. Klein-schmidt, Treptower Park 17, Berlin-Treptow.
- 268,100, Class 12o (August 9, 1912). Process for manufacture of isoprene. Badische Anilin und Soda Fabrik, Ludwigshafen.
- 268,101, Class 12o (February 11, 1913). Process for manufacture of isoprene. Badische Anilin und Soda Fabrik, Ludwigshafen.
- 268,102, Class 12o (November 19, 1912). Process for manufacture of isoprene. Badische Anilin und Soda Fabrik, Ludwigshafen.
- 268,212, Class 47f (August 27, 1912). Process for making packing rings with a metal cover and soft inner portion. Willbrandt & Co., Hamburg.

A LETTER ON DIRECT RUBBER IMPORTATIONS.

EDITOR OF THE INDIA RUBBER WORLD.

DEAR SIR:

The elimination of the London market from the relations between eastern plantation owners and American consumers involves certain points of difficulty, the chief of which are: Examination at market of despatch on behalf of purchasers or consignees; care in packing; route of shipment, and financing.

When standards have been agreed on by which the various qualities will be distinctively known the form of examination will be a matter of arrangement. This applies particularly to purchases. In the case of consignments, when advances are to be made it is important to know that at least the amount of such advances is fully covered by the goods they represent. Official inspection is advisable more particularly as to the absence of any undesirable admixtures.

Such examination should extend to the cases as to their materials and forms of packing. As it would be distinctly undesirable to have any repacking on the way to New York, the original packing should be sufficiently good to stand the entire journey. In view of the sensitive character of rubber and its relatively high value, it would be unadvisable to exercise parsimony in this respect. The alleged necessity for repacking in London on account of the defective nature of the original packing is a trouble which has to be abolished before the question of rubber packing will be settled. It is, of course, doubtful whether the cases have any such ultimate value as would make it worth while to give special attention to this point.

As to route of shipment, where transshipment in London economizes in through freight the equivalent of such a rate should be obtainable at the port of shipment; but the packing should be sufficiently strong to stand transshipment without repacking. A through bill of lading to American port is advisable in such cases. Direct importers should be represented at intermediate points so as to be able, in case of need, to place their interests in proper hands.

Shipments of tropical products can be made direct to New York, being covered by the acceptances by London banks of the shipper's draft at three to four months' sight, against the shipping documents. The latter are sent to New York, where they are delivered to the purchasers, who in some cases have the option, instead of paying cash, of giving a "trust receipt" which binds them to place the London bank in funds to meet the above named acceptances at due dates.

Financing involves various considerations. It is, of course, highly important to have it expressed in the contracts whether the delivery is taking place in the East or in America and whether in American or Eastern currency, also what advances (if any) are to be given by the purchasers. The exact nature of any responsibility and where it starts are matters about which there should be no misunderstanding.

These points form elements in the daily life of the English import merchant and are among those requiring to be met by any American concern. In view of exchange fluctuations it is advisable to have all contracts in gold.

G. C. MINGUS, LATE MERCHANT.

Report of the Crude Rubber Market.

THE principal characteristic of the London market for Upriver Fine Pará has been the absence of market fluctuations. On November 22 the price stood at 3s. 2d., about the average of the rate for the previous four weeks. It has since remained in close proximity to this figure; the lowest point touched being 3s. 1½d. on December 13, and the highest 3s. 2½d. on December 4. On December 23 it closed at 3s. 1¾d. against 3s. 2d. on November 22.

As compared with a fall during the month of ¾d. per pound on Fine Pará, plantation rubber has lost 1½d. per pound, the closing days of November having witnessed a reduction of 1d., which was not regained during December. The prices respectively stood: November 22, 2s. 4¾d.; December 23, 2s. 3¾d. The premium in favor of Fine Pará was thus 9¼d. at the former date and 10d. at the later period.

Statistics to November 30 show the total visible supply of Brazilian rubber was 5,750 tons, against 5,920 October 31 and 5,320 on November 30, 1912. Stock of plantation rubber on November 30, 1913, was 3,684 tons as compared with 2,512 tons on November 30, 1912. That the market can carry this increased quantity is shown by the deliveries from January 1 to November 30 having been 28,400 tons in 1913 against 17,622 in 1912.

For the London sales of November 18 about 1,000 tons had been catalogued, but private transactions reduced the quantity for public auction to 900 tons. Notwithstanding the business which had been transacted privately since the previous sale there was a satisfactory demand, which maintained prices during the first two days. A slight relapse took place on the third day when a fall of 1d. per pound was recorded.

The London auctions of December 2 included about 1,150 tons. A good demand was recorded, which kept prices fairly steady, while American business was small. At the auctions of December 16, 691 tons were offered, which met with good demand at a decline of about ½d. per pound.

At Havre on November 28, 94 tons (principally Congo) were offered, a large proportion of which sold at satisfactory prices; the plantation rubber being almost all taken with an advance representing on the average 6 per cent.

An inscription sale took place at Rotterdam on December 18, including 55 tons Congo, 26 tons *Hevea* and 11 tons *Ficus*. On December 10 a sale was held at Amsterdam of 105 tons, including 92 tons *Hevea* and 9 tons *Ficus*. Practically the whole quantity was taken at satisfactory rates, *Hevea* in some cases showing an advance of 2 per cent.

At Antwerp on December 16 were offered 17 tons. Congo and various descriptions, with 61 tons plantation. Demand is understood to have been good.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and December 26—the current date:

PARA.	Jan. 1, '13.	Dec. 1, '13.	Dec. 31, '13.
Island, fine, new.....	102@103	66 @ 67	60 @ 61
Islands, fine, old.....			
Upriver, fine, new.....	111@112	76 @ 77	73 @ 74
Upriver, fine, old.....	118@119		76 @ 76
Islands, coarse, new.....	56@ 57	29½@ 30	28 @ 29
Islands, coarse, old.....			
Upriver, coarse, new.....	82@ 83	48 @ 49	44½@ 45
Upriver, coarse, old.....			

Cametá	57@ 58	37½@ 38	36 @ 37
Caucho (Peruvian) ball..	84@ 85	46 @ 47	44 @ 45
Caucho (Peruvian) sheet.			

PLANTATION CEYLONS.

Fine smoked sheet.....	112@113	65 @ 66	60 @ 61
Fine pale crepe.....	110@111	58 @ 59	56 @ 57
Fine sheets and biscuits..	109@110	56 @ 57	56 @ 57

CENTRALS.

Esmeralda, sausage	81@ 82	40 @ 41	39 @ 40
Guayaquil, strip			
Nicaragua, scrap	80@ 81	37 @ 39	38 @ 39
Panama			
Mexican plantation, sheet			
Mexican, scrap	79@ 80	37 @ 38	35 @ 39
Mexican, slab			
Mangabeira, sheet			
Guayule	60@ 61		35 @ ..
Balata, sheet		63 @ 64	
Balata, block		44 @ 45	45 @ 50

AFRICAN.

Lopori, ball, prime.....		47 @ 48	44 @ 48
Lopori, strip, prime.....			
Aruwimi	98@ 99	37 @ 38	
Upper Congo, ball red...	101@102	45 @ 46	
Ikelemba			
Sierra Leone, 1st quality.	96@ 97	45 @ 46	
Massai, red	99 @ 100		
Soudan Niggers			
Cameroon, ball		33 @ 40	28 @ 31
Benguela	74@ 75		
Madagascar, pinky			
Accra, flake	26@ 27	20 @ 22	22 @ 23

EAST INDIAN.

Assam			
Pontianak	67½@ ..	6 @ 6¼	
Borneo			

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During December the demand for commercial paper has continued light, as it has been for the past two months, and rates have ruled very full, being about 5¾@6 per cent. for the best rubber names and 6¼@6¾ per cent. for those not so well known. However, quite an improvement in the situation is expected by the middle of January.

NEW YORK PRICES FOR NOVEMBER (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	\$0.73@0.80	\$1.02@1.08	\$0.99@1.06
Upriver, coarse .....	.46@ .49	.80@ .84	.87@ .91
Islands, fine .....	.66@ .70	.64@ .68	.93@ 1.00
Islands, coarse .....	.38@ .40	.53@ .58	.57@ .60
Cametá .....	.36@ .37	.55@ .58	.60@ .62

STATISTICS PARA INDIA RUBBER (IN TONS).

(INCLUDING CAUCHO).

STATISTICS FOR THE MONTH OF NOVEMBER.

	1913.	1912.	1911.	1910.
Receipts at Pará.....	Pará. Caucho. Tons.	Tons.	Tons.	Tons.
Shipments to Liverpool..	1,430 180 = 1,610	1,840	1,580	2,070
Shipments to Continental Ports	270 190 = 460	670	730	800
Shipments to America...	940 100 = 1,040	1,710	1,680	1,170
American Imports	1,500 220 = 1,720	1,810	1,945	1,430
American Deliveries	1,390 190 = 1,580	1,830	1,935	1,510
Liverpool Imports	1,140 80 = 1,220	1,285	1,380	1,440
Liverpool Deliveries	1,320 205 = 1,525	1,305	1,110	1,369
Continental Imports	260 70 = 330	460	560	500
Continental Deliveries	260 70 = 330	540	400	390

VISIBLE SUPPLY—1st DECEMBER, 1913.

	1913.	1912.	1911.	1910.
Stock in England, Pará, 1st hands.....	Pará. Caucho.	Tons.	Tons.	Tons.
Pará, 2nd hands.....	377 4 = 381	90	1,920	1,110
Caucho	210	150	330	458
Stock in Pará, 1st hands.....	310 70 = 380	90	140	600
2nd hands.....	540 80 = 620	220	610	640
Synthetic	830	800	2,310	.....
Stock in America.....	180 90 = 270	100	50	250
Stock on Continent.....	20 40 = 60	180	90	.....
Afloat—Europe	1,100 320 = 1,420	1,580	1,060	1,690
Afloat—America	370 80 = 450	1,000	200	450
	3,750 860 = 4,610	4,340	7,030	6,515

Total Visible Supply, including Caucho. 4,610 4,340 7,030 6,515

CROP STATISTICS—30th JUNE, 30th NOVEMBER, 1913.

	1913.	1912.	1911.	1910.
Para Receipts.....	Pará. Caucho.	Tons.	Tons.	Tons.
Para Shipments to America 5,030 980	10,700 2,190 = 12,890	14,140	12,180	13,140
Para Shipments to Europe. 5,420 1,350	6,770 8,090 = 14,860	6,850	6,900	.....
England Landings, net.....	4,290 5,432 = 9,722	4,889	4,621	.....
England Deliveries, net.....	5,475 6,392 = 11,867	7,839	4,839	.....
America Landings, net.....	6,680 7,340 = 14,020	8,305	5,310	.....
America Deliveries, net.....	6,590 7,350 = 13,940	7,915	5,200	.....
Continental Imports, net.....	1,120 1,810 = 2,930	1,080	1,080	.....
Continental Deliveries, net.....	1,310 1,890 = 3,200	1,010	1,040	.....

POSITION—1st DECEMBER, 1913.

Decrease in Receipts during November, 1913, against November, 1912.....	1,210
Decrease in Receipts—Crop, July/November, 1913, against 1912.....	1,250
Decrease in Deliveries—Crop, July/November, 1913, England and Continent, against 1912	1,497
Decrease in Deliveries—Crop, July/November, 1913, America, against 1912	700
Increase in Visible Supply Pará Grades, against 1st December last	270
Increase in Stock, England, November 30th, 1913, against November 31st, 1912	220

*A decrease of 1,520 tons Rubber, and an increase of 270 tons Caucho.

During the month 130 tons, including 20 tons Caucho, have been shipped from Europe to America.

WM. WRIGHT & CO., Brokers,
21, Mincing Lane, London, E. C.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS—Prices paid by consumers for carload lots, per pound.

	Dec. 30, '13.
Old rubber boots and shoes—domestic	7¼@ 8
Old rubber boots and shoes—foreign	7½@ 7¾
Pneumatic bicycle tires	4½@ 4¾
Automobile tires	5¼@ 5½
Solid rubber wagon and carriage tires.....	5¼@ 5½
White trimmed rubber	10 @ 10¼
Heavy black rubber	3¼@ 4
Air brake hose	3½@ 4
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2½
Matting	5 @ 5¼
No. 1 white auto tires	6 @ 6½
Foreign auto tires	5¼@ 5½



CHART SHOWING FLUCTUATIONS IN RUBBER PRICES DURING 1913

Amsterdam.

JOOSTEN & JANSSEN report [December 10]

Today's sale was decidedly favorable to our results. Almost the whole of the 105 tons (principally Hevea) was sold at satisfactory rates, in some instances commanding a slight advance.

Rotterdam.

HAVELAAR & DE VRIES report [December 2]:

A sale of 67 tons is reported for December 1st, comprising Hevea and Ilex.

IMPORTS FROM PARA AT NEW YORK.

[The Figures Below Were Taken From]

NOVEMBER 28.—By the *Christopher*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	130,700	37,500	164,100	21,600 =	353,900
Meyer & Brown.....	137,900	19,600	75,600	73,300 =	306,400
General Rubber Co.....	.....	.....	22,000	..... =	22,000
H. A. Astlett & Co.....	54,200	9,500	86,800	8,500 =	159,000
Johnstone Whitworth & Co..	23,200	7,900 =	31,100
American Express Co.....	11,100 =	11,100

Total	357,800	74,500	348,300	880,600
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DECEMBER 16. By the steamer *De Vries*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	535,100	.....	226,100	84,000 =	954,700
Meyer & Brown.....	135,400	33,500	83,900	37,200 =	290,000
General Rubber Co.....	70,600	12,200	40,800	3,200 =	126,800
Henderson & Korn.....	60,000	4,000	45,000	..... =	109,000
James T. Johnstone.....	.....	.....	4,500	..... =	4,500
H. A. Astlett & Co.....	23,200	8,900	36,100	600 =	68,800
G. Amsinck & Co.....	125,700	400	24,000	11,300 =	161,400
American Export Co.....	11,100	.....	.....	..... =	11,100
American Export Co.....	3,800	.....	300	..... =	4,400

Total

DECEMBER 3.—By the *Guatemala*—Havre:

DECEMBER 3.—By the <i>Guatemala</i> —Havre:		
Arnold & Zeiss.....	40,000	
Various	18,000	58,000
DECEMBER 3.—By the <i>Niagara</i> —Havre:		
Arnold & Zeiss.....		7,000
DECEMBER 6.—By the <i>Celtic</i> —Liverpool:		
Robinson & Co.....		15,000
DECEMBER 8.—By the <i>Caronia</i> —Liverpool:		
Various		7,000
DECEMBER 8.—By the <i>Lapland</i> —Antwerp:		
Meyer & Brown.....	4,000	
Johnstone Whitworth Co.....	6,000	10,000
DECEMBER 8.—By the <i>Rochambeau</i> —Havre:		
Meyer & Brown.....		60,000
DECEMBER 9.—By the <i>Minnehaha</i> —London:		
Arnold & Zeiss.....	35,000	
Various	11,200	46,200
DECEMBER 11.—By the <i>Patricia</i> —Hamburg:		
Arnold & Zeiss.....	40,000	
Henderson & Korn.....	22,500	
Johnstone Whitworth & Co.....	11,200	
Rubber & Guayule Agency, Inc.,	60,000	
Various	11,000	144,700
DECEMBER 15.—By the <i>St. Paul</i> —Southampton:		
Robinson & Co.....		16,000
DECEMBER 15.—By the <i>Cymric</i> —Liverpool:		
Arnold & Zeiss.....	7,500	
Robinson & Co.....	2,200	
Various	7,500	17,200
DECEMBER 16.—By the <i>Vaderland</i> —Antwerp:		
Various		13,500
DECEMBER 16.—By the <i>Satsuma</i> —Singapore:		
Various		20,000
DECEMBER 19.—By the <i>Barcelona</i> —Hamburg:		
Various		5,000

[*Denotes plantation rubber.]

POUNDS.

FOUNDS:

NOVEMBER 21.—By the *Majestic*=Southampton:
Henderson & Korn..... *26,000
Ed. Maurer..... *11,200
Chas. T. Wilson..... *6,000
Meyer & Brown..... *5,000 *48,200

NOVEMBER 21.—By the *Pennsylvania*=Hamburg:
Rubber & Guayule Agency, Inc..... *7,000

NOVEMBER 24.—By the *Philadelphia*=Southampton:
Meyer & Brown..... *12,000
Ed. Maurer..... *25,000
Robinson & Co..... *50,000
Arnold & Zeiss..... *28,000
Henderson & Korn..... *17,000
Chas. T. Wilson..... *2,200
T. H. Cone..... *3,000
Various..... *11,200 *148,400

NOVEMBER 24.—By the *Carmania*=Liverpool:
General Rubber Co..... *537,000

NOVEMBER 26.—By the *Karonga*=Colombo:
Meyer & Brown..... *18,000
Ed. Maurer..... *35,000
W. R. Grace & Co..... *13,500
Various..... *733,500 *100,000

NOVEMBER 26.—By the *Limburg*=Antwerp:
Meyer & Brown..... *107,000
Arnold & Zeiss..... *30,000 *137,000

NOVEMBER 26.—By the *Maryland*=London:
Meyer & Brown..... *67,000
W. Stiles..... *3,000
Robinson & Co..... *22,500
James T. Johnstone..... *125,000
Rubber & Guayule Agency, Inc..... *7,000
Chas. T. Wilson..... *100,000
W. R. Grace & Co..... *33,500
Henderson & Korn..... *11,200
General Rubber Co..... *268,000
Arnold & Zeiss..... *15,000
Adolph Hirsch & Co..... *3,500
Rubber Trading Co..... *2,200
Raw Products Co..... *3,000
Various..... *45,400 *736,300

NOVEMBER 28.—By the *Lusitania*=Liverpool:
General Rubber Co..... *28,000
James T. Johnstone..... *6,000 *34,000

NOVEMBER 28.—By the *Oceanic*=Southampton:
Meyer & Brown..... *37,000
Arnold & Zeiss..... *33,500
Rubber & Guayule Agency, Inc..... *85,000
Robinson & Co..... *40,000
W. R. Grace & Co..... *35,000
Ed. Maurer..... *31,500
Henderson & Korn..... *168,000
Rubber Trading Co..... *1,500 *421,500

NOVEMBER 28.—By the *President Lincoln*=Hamburg:
Ed. Maurer *12,000
Chas. T. Wilson..... *7,000
Rubber & Guayule Agency, Inc. *17,500
Various *35,000 *71,500

DECEMBER 1.—By the *Karema*=Colombo:
Meyer & Brown..... *17,500
W. R. Grace & Co..... *38,000
W. R. Grace & Co..... *15,000
H. W. Peabody & Co..... *6,500
Ed. Maurer *4,500 *81,500

DECEMBER 1.—By the *Westerdyk*=Amsterdam:
Meyer & Brown..... *28,200
Rubber Trading Co..... *1,200
Various *1,100 *30,500

DECEMBER 2.—By the *New Amsterdam*=Amsterdam:
Meyer & Brown..... *64,000
Chas. T. Wilson..... *1,000
Robert Badenhop..... *1,500
Rubber Trading Co..... *3,500
Various *46,000 *116,000

DECEMBER 2.—By the *Zeeland*=Antwerp:
Meyer & Brown..... *58,000
Arnold & Zeiss..... *11,200
Various *2,200 *71,400

DECEMBER 2.—By the *Minneapolis*=London:
General Rubber Co..... *325,000
Chas. T. Wilson & Co..... *135,000
Arnold & Zeiss..... *90,000
Ed. Maurer *45,000
Adolph Hirsch & Co..... *30,000
Johnstone Whitworth Co..... *27,000
Meyer & Brown..... *26,200
Rubber & Guayule Agency, Inc. *22,500
Robinson & Co..... *15,000
L. Littlejohn & Co..... *11,200
W. Stiles *5,000
W. R. Grace & Co..... *3,000
Various *31,200 *766,100

DECEMBER 2.—By the *Kentucky*=Colombo:
W. R. Grace & Co..... *45,000
Ed. Maurer *26,000
Meyer & Brown..... *23,500
Various *26,500 *121,000

DECEMBER 2.—By the *Kaiserin Auguste Victoria*=Hamburg:
Arnold & Zeiss..... *9,000
Rubber & Guayule Agency, Inc. *2,000
Various *10,000 *21,000

DECEMBER 3.—By the *Guatemala*=Havre:
Michelin Tire Co..... *40,000

DECEMBER 3.—By the *Niagara*=Havre:
Michelin Tire Co..... *22,500

DECEMBER 4.—By the *New York*=Southampton:
Meyer & Brown..... *30,000
Arnold & Zeiss..... *56,000
W. Stiles *7,000
Ed. Maurer *7,000
Ed. Maurer *11,200
Henderson & Korn..... *50,000 *161,200

DECEMBER 5.—By the *Columbia*=Liverpool:
General Rubber Co..... *225,000

DECEMBER 7.—By the *Lafayette*=Antwerp:
Meyer & Brown..... *116,500
Arnold & Zeiss..... *78,500
General Rubber Co..... *11,200
Various *1,500 *228,700

DECEMBER 9.—By the *Minnehaha*=London:
General Rubber Co..... *240,000
Arnold & Zeiss..... *225,000
Meyer & Brown..... *78,000
Chas. T. Wilson..... *25,000
Ed. Maurer *20,000
Johnstone Whitworth & Co..... *12,500
L. Littlejohn & Co..... *5,000
Henderson & Korn *4,500
Robinson & Co..... *4,000
Adolph Hirsch & Co..... *3,500
W. Stiles *135,000 *846,000

DECEMBER 10.—By the *Noordam*=Amsterdam:
Various *13,500

DECEMBER 10.—By the *Fruenfels*=Colombo:
Meyer & Brown..... *17,000
W. R. Grace & Co..... *60,000
H. W. Peabody & Co..... *8,000
Ed. Maurer *16,000
Various *17,000 *118,000

DECEMBER 11.—By the *Olympic*=Southampton:
Meyer & Brown..... *38,500
W. R. Grace & Co..... *14,000
Ed. Maurer *11,200
Johnstone Whitworth Co..... *7,000
Raw Products Co..... *5,600
Arnold & Zeiss..... *40,000 *116,300

DECEMBER 11.—By the *Patricia*=Hamburg:
Various *7,500

DECEMBER 15.—By the *Minnewaska*=London:
Meyer & Brown..... *35,000
General Rubber Co..... *82,000
Johnstone Whitworth & Co..... *22,500
Charles T. Wilson..... *17,000
Western Electric Co..... *17,000
Various *6,000 *179,500

DECEMBER 15.—By the *St. Paul*=Southampton:
Henderson & Korn..... *60,000
Ed. Maurer *22,500
W. R. Grace & Co..... *13,500
Arnold & Zeiss..... *17,500
Robinson & Co..... *25,000
Charles T. Wilson..... *11,200
Raw Products Co..... *7,000
Rubber Trading Co..... *2,200 *158,900

DECEMBER 16.—By the *Vaderland*=Antwerp:
Meyer & Brown..... *50,000

DECEMBER 16.—By the *Salsom*=Singapore:
Henderson & Korn..... *56,000
W. R. Grace & Co..... *9,000
Malaysian Rubber Co..... *8,000
Ed. Maurer *50,000

L. Littlejohn & Co..... *33,500
L. Littlejohn & Co..... *11,200
Arnold & Zeiss..... *4,500
Various *35,000 *207,200

DECEMBER 18.—By the *St. Louis*=Southampton:
Meyer & Brown..... *28,500
Rubber Trading Co..... *8,000
Robinson & Co..... *19,500
W. R. Grace & Co..... *60,000
Johnstone Whitworth & Co..... *4,500
Arnold & Zeiss..... *220,000
Henderson & Korn..... *5,600
Ed. Maurer *11,200
Various *30,700 *388,000

DECEMBER 18.—By the *Shamrock*=Singapore:
Malaysian Rubber Co..... *5,600
Arnold & Zeiss..... *2,200
Ed. Maurer *22,500
W. R. Grace & Co..... *3,500
Henderson & Korn..... *11,200
Ed. Maurer *4,000
L. Littlejohn & Co..... *13,500
Ed. Boustad & Co..... *8,000
Hadden & Co..... *2,200
Various *2,700 *95,400

DECEMBER 19.—By the *Afghan Prince*=Singapore:
Meyer & Brown..... *2,200
W. R. Grace & Co..... *16,000
Henderson & Korn..... *33,500
L. Littlejohn & Co..... *33,500
Arnold & Zeiss..... *6,000
Malaysian Rubber Co..... *8,000
Ed. Maurer *27,000 *126,200

DECEMBER 19.—By the *Barcelona*=Hamburg:
Meyer & Brown..... *8,000
Various *7,000 *15,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—NOVEMBER, 1913.

Imports:	Pounds.	Value.
India-rubber	9,718,004	\$5,110,017
Balata	231,008	116,875
Guayule		
Gutta-percha	35,740	22,269
Gutta-jelutong (Pontianak) ..	328,113	21,653
Total	10,312,865	\$5,270,814

Exports:	Pounds.	Value.
India-rubber	54,389	32,983
Balata	48,616	25,399
Guayule	31,687	12,040
Gutta-percha		
Reclaimed rubber	101,193	12,052
Gutta-jelutong (Pontianak) ..		
Rubber scrap, imported.....	1,817,104	155,922
Rubber scrap, exported.....	785,310	35,771

BOSTON ARRIVALS.

IMPORTS IN NOVEMBER, 1913.

	Pounds.	Value.
Gutta-jelutong	13,443	384
India rubber	32,985	20,603

EXPORTS OF INDIA-RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS FOR OCTOBER, 1913 (IN KILOGRAMS).

NEW YORK.						EUROPE.					
EXPORTERS—	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Berringer & Co.....	159,611	31,975	120,042	21,613	333,241	338,240	29,985	47,168	63,564	478,957	812,198
General Rubber Co. of Brazil.....	60,493	11,147	25,048	5,039	101,727	11,250	5,400	1,880	723	19,262	120,989
J. Marques	151,324	46,947	95,567	57,267	351,105	150,533	1,360			151,893	527,678
Seigmann & Co.....	37,042		5,353	19,742	62,137	19,259			16,003	35,262	97,399
Suarez Hermanos & Co., Ltd.....						40,000	1,915	10,408	5,269	64,580	64,580
De Lagotellerie & Co.....						34,510	1,870			36,380	36,380
Pires Teixeira & Co.....	27,370	4,250	34,320		65,940	20,910		2,310		23,220	89,160
Sundry exporters	2,720		2,640	560	5,920	9,062	1,052	1,032	147	11,293	17,213
Itacoatiara, direct						11,291	1,540	4,654	1,007	18,492	18,492
Manaos, direct	438,560	94,319	282,970	104,221	920,070	642,043	43,131	92,132	86,713	864,019	1,784,089
Iquitos, direct	58,525	85,279	80,392	88,358	656,867	458,649	49,146	38,789	95,939	642,523	1,299,390
Total, October, 1913.....	899,923	182,047	371,999	216,394	1,670,363	1,100,692	92,277	130,921	182,652	1,506,542	3,176,905



Vol. 49.

JANUARY 1, 1914.

No. 4.

TABLE OF CONTENTS.

Editorial:	Page.
1913 in the Rubber Trade—and 1914	165
"The India Rubber World" Follows the Uptown March..	166
The Last of the Boston Pioneers.....	167
Is Rubber Headed Toward Higher Levels?.....	167
Mexico from the Inside.....	167
The Clerk Can Undo It All.....	168
What the Auto Shows Have Cost the Tire Makers.....	168
The Rubber Tariffs of Other Countries.....	168
The Rubber Situation in Brazil.....	169
Bulletin of the Museu Goeldi, Para.....	170
A Glance at Export Statistics of Rubber Goods.....	172
The Rubber Tariffs of Foreign Countries.....	173
The Editor's Book Table.....	183
How It Looks to an American in Mexico.....	184
India Rubber Goods in Commerce.....	184
Will 1914 See a Shortage in Rubber?.....	185
Inscription Sales.....	186
The Trade in Boston.....	187
The Trade in Akron.....	187
The Trade in Chicago.....	188
The Trade in Rhode Island.....	189
The Trade in San Francisco.....	190
Auto Shows and the Tire Makers.....	191
Congressman Lindquist's Remarkable Bill.....	192
The Remodeled Stoughton Plant.....	193
Obituary Record.....	194
News of the American Rubber Trade.....	195
A Few of the Latest Tires.....	202
New Rubber Goods in the Market.....	203
New Trade Publications.....	204
New Machines and Appliances.....	206
The India Rubber Trade in Great Britain.....	209
Some Rubber Interests in Europe.....	210
Para Rubber Culture in Dutch Guiana.....	211
Rubber Notes from British Guiana.....	212
Recent Patents Relating to Rubber.....	213
A Letter on Direct Rubber Importations.....	215
Report of the Crude Rubber Market.....	216

RUBBER ARRIVALS FROM THE CONGO.

DECEMBER 10.—By the steamer *Elizabethville*:

Bunge & Co.....	(Belgika) kilos	1,000
do.....	(Cie. du Congo belge)	35,600
do.....	(Comfina)	2,300
do.....	(Forminière)	15,000
do.....		1,300
Société Coloniale Anversoise.....	(Kasai)	7,000
do.....	(Intertropical)	100,763
do.....	(Comfina)	20,205
Credit Commercial & Commercial, At. L. & W. Van de Velde—S. A.).....		45,886
Williaert Frères.....		12,700
Charles Dethier.....	(American Congo Cy)	5,000
		2,000
		251,154

Antwerp.

RUBBER ARRIVALS FOR NOVEMBER.

DETAILS.	1913	1912.	1911.	1910.	1909.
Stocks, Oct. 31....kilos	638,076	568,819	578,208	598,774	464,831
Arrivals in November—					
Congo sorts	191,535	403,281	148,361	344,885	417,392
Other sorts	301	4,357	63,487	54,404	68,923
Plantation sorts	156,059	161,154	70,761	53,536	47,308
Aggregating	985,971	1,137,611	860,817	1,051,599	998,454
Sales in November....	439,372	430,066	226,555	483,451	262,838
Stocks, November 30.	546,599	707,545	634,262	568,148	735,616
Arrivals since Jan. 1					
Congo sorts	2,652,540	3,061,697	2,854,412	2,870,684	3,276,349
Other sorts	111,717	131,291	433,347	369,227	807,364
Plantation sorts	1,898,676	1,258,777	596,740	518,062	286,248
Aggregating	4,662,933	4,451,765	3,884,499	3,757,973	4,369,961
Sales since January 1.	4,627,384	4,408,758	3,838,549	3,731,335	4,230,080

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to November 10, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain	6,343,787	11,936,265
To United States	3,572,959	5,197,727
To Belgium	999,707	3,226,186
To Australia	219,736	417,593
To Germany	156,364	213,017
To Austria	62,832	30,097
To Japan	55,118	222,605
To Canada	22,078	.....
To Italy	5,909	41,074
To Russia	2,288	11,301
To Holland	2,282	992
To France	2,017	15,682
To India	400	1,381
To Norway and Sweden.....	39	.....
To Straits Settlements .....	.....	97,120
Total	11,445,516	21,411,040

(Same period, 1911, 5,115,241; same period, 1910, 2,706,197.)

The export figures of rubber for 1913, given in the above table, include the imports re-exported. (These amount to 1,991,137 pounds—1,495,190 pounds from the Straits, and 495,947 pounds from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA

[From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.]

To—	Singapore.	Penang.	Port Swettenham.	TOTAL.
Great Britain pounds.	16,154,472	10,807,733	19,816,402	46,778,607
Continent	227,114	96,000	2,509,881	2,832,995
Japan	886,398	.....	.....	886,398
Ceylon	59,079	210,133	1,125,633	1,394,845
United States	4,694,566	220,667	.....	4,915,233
Australia	73,716	.....	.....	73,716
Total	22,095,345	11,334,533	23,451,916	56,881,794
Same period, 1912....	11,440,319	6,737,897	16,673,987	34,852,203
Same period, 1911....	5,291,205	3,565,100	9,539,339	18,395,644
Same period, 1910....	2,980,439	1,652,782	6,886,394	11,519,615

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FEBRUARY 1, 1914.

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 The Granby Rubber Co., Limited, Granby, P. Q.
 The Merchants Rubber Co., Limited, Berlin, Ont.
 The Berlin Rubber Manufacturing Co., Limited, Berlin, Ont.
 The Maple Leaf Rubber Co., Limited, Port Dalhousie, Ont.
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TABLE OF CONTENTS ON LAST PAGE OF READING.

THE AUTOMATIC INCREASE IN RUBBER CONSUMPTION.

THERE has been much agitation among the Eastern planters as to means and methods of increasing the use of rubber. This is very natural, under the circumstances, for plantation rubber bids fair to come on the market in tremendous volume within the next five years. In their desire to find new outlets for their product the planters have even considered the advisability of supplying manufacturers with a certain amount of crude rubber either at a price much below the market or entirely free of cost, to be used exclusively in the manufacture and marketing of entirely new articles not hitherto made of rubber.

While undoubtedly, either through these subsidized efforts to discover new ways of consuming rubber or through the natural competition of rival manufacturers, each anxious to add to his output, many new rubber articles will be manufactured and marketed during the next few years, still, in addition to this method of increasing rubber consumption, there is a process already going on which will tend naturally and automatically to increase the use of rubber—and that is the gradual reduction in

the price of staple rubber articles to the general consumer.

Attention was called in the January issue of THE INDIA RUBBER WORLD to the reductions during the year 1913, amounting to 25 per cent., in the price of tires to the auto. owner—these reductions following an earlier lowering of price during the preceding year. Following this decrease in tire prices, the new lists of the rubber footwear companies, issued January 1, indicate a marked price reduction in their products. Elsewhere in this number there will be found a table showing in detail the extent to which footwear prices have been reduced from those of a year ago. The average of the items selected proves that present prices are nearly 12 per cent. under those of January, 1913. Another new price list, issued the first of this year by a prominent golf ball manufacturer, shows a drop of price amounting to 16 per cent. in that popular line of rubber goods.

These are just a few illustrations of the general tendency toward lower prices in manufactured rubber goods. And it is quite safe to assume that the increase in consumption will be considerably more than proportionate to the decrease in cost. Of course in some lines—belting and packing, for instance—decreased cost may not greatly increase consumption, as the volume of consumption depends on the necessities of trade rather than on the price of the article. But in other lines decreased price will mean a greatly extended use. In garden hose, for example, if the price of the ordinary garden or lawn hose could be cut to one-half its present figure it is safe to say that the increase in consumption would be vastly more than doubled, for many people would then be tempted to use hose who now for reasons of economy (probably a false economy) prefer to await the slow and uncertain operations of nature.

The planters, therefore, need not be greatly worried about the 300,000 tons of rubber which they expect to have ready for market five years from now, because, entirely apart from new rubber articles for general consumption, the old standard commodities, as their price is lowered, will increase vastly in popularity and come more and more into general use.

RUBBER LITERATURE.

IN the early days of the INDIA RUBBER WORLD those readers who found that drinking at its fount created in them a new thirst for literature on the topic which was part of their daily lives were constantly writing to the editor for a list of books which would prove the royal road to a complete knowledge of the rubber business.

Regretfully he would reply that he would be glad to give the names of the books wanted, but that he himself, during many years, had been searching unsuccessfully for the desired literature. Finally he was forced to write an editorial on "The Paucity of Rubber Literature," saying that inquirers would not soon find the books they were searching for because they did not exist. As matters stood at that time there was but one counsel to give, and that was given—to study in the school of experience. The books were few and of doubtful value and "as to finding books which will let them into the secrets of the business, such books do not now exist."

Seven years later the condition had changed so little that the long-suffering editor, answering the perennial and insistent question, told one correspondent that no books were to be had, but that he might consult the articles on "India Rubber" and "Caoutchouc" in the standard encyclopedias, after which, if he would talk with an intelligent operative from a good rubber factory, he might learn something about the rubber business. But if the disappointed seekers of those days are still interested in the theme they need not go athirst. The Sahara of that period is more like a Niagara today. There are books on every branch of the rubber business, and, it might be said, every twig of every branch. There are books on the gathering and coagulation of wild rubber; books on planting and cultivation and marketing; books on plantation management, on buying crude rubber and on selling it, on vulcanization, on every phase of manufacture, and on the testing of rubber goods after they are manufactured.

There are books on the botany of rubber plants, with monographs on *Hevea*, *Castilloa*, *Ficus* and *Funtumia*. There are books and still more books on the chemistry of rubber, and its laboratory companions. There are pamphlets and booklets and leaflets in stacks, telling of experiments in rubber culture in public gardens. There are directories of buyers and sellers, exporters and plantation syndicates. If the reader does not want his literature served up in the English language he may have it done in French, German, Portuguese, Dutch, Spanish or Japanese. He may regale himself with books on tires and toys and rubber hand stamps, books of statistics, of "shares" and of exhibitions. He can feast himself on all the courses, from the possibilities of the guayule shrub to why the ultimate consumer's rubber shoes part at the seams; and he can write down his reflections in a "Rubber Diary and Year Book." He can read picturesque and interesting tales of travel in lands where the rubber tree grows, from Borneo to Brooklyn. He can read

"popular" books by writers who think that crude rubber is gutta percha, or he can give his mind to thoughtful little brochures on "Fungoid Diseases of *Funtumia*" or "Insurance of Rubber Trees." When he gets through with all of these, if he thinks another book on the rubber business is needed, he can write it himself—and probably will. But at least and at last, the editor is relieved of the task of explaining to disappointed readers that there are no books on the rubber business.

PRIZES TO BE AWARDED AT THE LONDON RUBBER EXPOSITION.

THE Fourth International Rubber and Allied Industries Exhibition, which is to be held in London next June and July, will be distinguished from its three predecessors by the exceptionally large number of prizes and trophies which have been offered by various associations and which will be awarded to the successful competitors at that time. Many of these prizes are offered for the best methods of gathering and cultivating and coagulating rubber. These, naturally, will be only of general interest to the great body of our home readers; but there are some offers that certainly should appeal to American rubber men, as they have to do not with the planting or cultivation of rubber, but with the extension of its use or with its efficient and profitable manufacture.

The Mincing Lane Tea and Rubber Share Brokers' Association offers two prizes—one of 75 and the other of 25 guineas—for the best new ideas for the use of plantation rubber in a large way, the conditions being that the suggestions or inventions shall be thoroughly practical. The Rubber Growers' Association, of London, invites a similar competition, offering a prize of £50 and a gold medal for "the discovery and application of such new use for plantation rubber as may be adjudged the most valuable; special consideration being given to the weight of the rubber which such application is likely to consume."

Another prize—a valuable silver vase—offered by the "Gummi Zeitung" of Berlin, ought to awaken considerable interest among our factory experts. This trophy is offered for "the best design for laying out a factory for the manufacture of rubber goods; the specifications to include the greatest possible variety of production, to show the installation of individual machines for the working up of raw rubber, as well as machines for later processes and the arrangement for the finishing of the goods."

There is mentioned on another page of this issue, in some detail, the handsome silver cup, some 50 inches in height, offered by THE INDIA RUBBER WORLD for the best process of extracting latex from the wild *Hevea*, *Castilloa* or *Manihot* tree. This will interest most American readers chiefly as a proof that this publication is trying to encourage the gatherer of wild rubber to do his work intelligently and without waste; but the other three prizes which have been mentioned above—two for new ideas in the use of plantation rubber and the other for the best plan for factory equipment—ought certainly to touch a responsive chord in some of the American readers of this journal; and with our recognized inventive faculty there seems to be no reason why one, if not all, of these three awards should not, as they leave London (assuming that they do leave) take their way hitherward across the Atlantic.

Competitors for these awards must submit their offerings by May, or not later than June. Those who are interested in this subject should send to Mr. A. Staines Manders, manager of the exposition, at 75, Chancery Lane, London, W. C., for a pamphlet giving all the conditions of the contest.

GETTING ACCURATE RUBBER STATISTICS.

THE Rubber Club of America, in pursuance of its policy of making itself generally useful to its members and beyond its members to the industry at large, has recently sent, through its secretary, a circular to the rubber manufacturers of the country asking them for statistical information covering their particular plant and its product.

Everyone is familiar with the classification of in-veracity made by some noted statistician, who divided all lies into "plain lies,—lies and statistics." The germ of truth that lies under this rather harsh characterization is due, undoubtedly, to the fact that accurate statistics have been very hard to get in the past. It is quite natural that the manufacturer should hesitate to turn his business inside out to the inspection of the government investigator, and of course where statistics are inaccurate at their origin they are not likely to gain in accuracy as they proceed. But it is of great value to any industry to have its figures accurately compiled. These figures show its condition. And if they bespeak a healthy condition there is cause for general congratulation; while if they indicate an un-

healthy condition obviously the thing to do is to discover the cause and to apply the remedy.

The statistics asked for by the Rubber Club are not to be signed by the manufacturer who supplies them, his identity being indicated only by the number attached to the blank which he fills out; and this number the secretary agrees to keep in strict confidence. So that those who contribute to this information can feel fully assured that while they are rendering assistance to the trade at large they are doing it at no personal hazard.

CLEARLY LIBELOUS.

A CONNECTICUT journal, evidently with a waspish turn of mind, contained in a recent issue the following brief paragraph:

"Now that cheaper rubber is promised, it is believed the time will again come when a pair of rubber overshoes will wear as much as a fortnight."

This is a most unwarrantable slur. It is clearly inflammatory and ought to be actionable. The average overshoe as made today will survive many a fortnight. To be sure, if a man were competing in the Weston class and trying to do 50 miles a day over rough roads, and should encounter a continuous rainstorm, compelling him to wear rubbers from morn till night, a fortnight's service might mean many hundred miles, and at the end of such a jaunt a pair of rubbers might very properly petition to be retired. But with the average citizen, any pair of rubbers made by a reputable manufacturer will take him through an ordinary season, and sometimes much longer. The writer of this paragraph looks back with unalloyed admiration on a certain pair of rubbers, technically known as sandals, bearing the trade mark of an old established New Jersey company, which he purchased several years ago. He wore those rubbers, off and on (*on* only when the elements required it, of course) for some three years, and then, having occasion to go to a western city, took them with him. After a day of muddy walking he left those devoted rubbers on the porch over night, and in the morning they had disappeared—feloniously abstracted—to the owner's abiding regret.

Just how long the discriminating person who carried those rubbers away continued to wear them can never be known, but from their last appearance, after having been worn nearly four years—a presidential term—they seemed to be good for a still further period of service. In the light of this experience, the slur of the Connecticut journal on the humble golosh seems most undeserved.

WHAT THE RUBBER CHEMISTS ARE DOING.

[The following articles have appeared in some of the foreign publications.]

IN the "Gummi Zeitung," Vol. 28, page 126, Utz contributes an article on the "Examination of Golden Sulphide of Antimony." For the determination of the antimony he recommends an electrolytic method suggested by A. Classen (Quantitative Analyse durch Elektrolyse, 5th Edition, page 153), which is as follows: The antimony is dissolved in 80 c.c. of a saturated sodium sulphide solution (specific gravity 1.14). To this is added 30 c.c. of a freshly-prepared 30 per cent. potassium cyanide solution, and the whole mixture diluted with water to about 140 c.c. This solution is then electrolyzed at a temperature of 65 to 70 degs. C., using a current density of 1.2 to 1.3 amperes. After completion of the electrolysis the deposited metal is washed and dried with alcohol at 80 to 90 degs. C.

The above method is discussed by W. Schmitz in the "Gummi Zeitung," Volume 28, Page 453. Numerous authorities are quoted in support of the statement that such antimony determinations always fall high. For this reason Schmitz prefers the following volumetric method, which is based on the oxidation of trivalent antimony to pentavalent antimony by means of potassium bromate according to the following equation: $2\text{KBrO}_3 + 2\text{HCl} + 3\text{Sb}_2\text{O}_3 = 2\text{KCl} + 2\text{HBr} + 3\text{Sb}_2\text{O}_5$. Very accurate results are claimed for this method, which is carried out as follows: About 0.5 grams antimony, previously dried at 60 degs. C., are dissolved by means of concentrated hydrochloric acid (specific gravity 1.19) on the water bath. The heating is continued until lead acetate paper shows the evolution of sulphuretted hydrogen to have ceased. There is thereupon added an excess of tartaric acid crystals, the solution diluted with water, and filtered from any insoluble matter. A few c.c. of hydrochloric acid are thereupon added to the solution and the latter titrated with potassium bromate, using either methyl orange or indigo as an indicator. The potassium bromate solution is made up by diluting 2.7850 grams to a volume of 1 litre. Such a solution corresponds to 6 mgs. antimony per c.c.

R. Ditmar contributes an article in the "Chemiker Zeitung," No. 115, 1913, on the Coloring of Rubber Goods. It is pointed out that up to within recent date it has been impossible to use organic dyestuffs for coloring rubber goods which are steam or dry-heat cured. The dyestuffs referred to do not withstand the high temperature of vulcanization and accordingly mineral pigments have to be resorted to. It has been found, however, that the so-called vat dyes do withstand vulcanizing conditions and may be effectively used in place of the mineral pigments, the result being that a much larger variety of shades thus becomes available. Not only vat dyes, but all dyestuffs containing reversible groups, withstand vulcanizing conditions. Such dyestuffs are anthraquinone derivatives.

A British patent, No. 18506/1912, has been issued to Arthur Heinemann for the improving of synthetic rubber. It has been found that the soft condition very frequently inherent to synthetic rubber is due to the fact that certain portions are in a lower state of polymerization. It is therefore desirable to remove these insufficiently polymerized portions. These latter portions are insoluble in acetone and soluble in benzol, and therefore cannot be separated by the utilization of either of these solvents. It has been found, however, that ethyl acetate dissolves the insufficiently polymerized portions while the highly polymerized product is not affected by this solvent, provided the solvent is present in excess.

British patent No. 11530/1912 has been granted Farben Fabriken vorm. F. Bayer & Co. for the accelerating of vulcanization. It has been found that piperidine and its homologues materially increase the speed of vulcanization. For instance, 100 parts Pará rubber, 10 parts sulphur and 5 parts piperidine are vulcanized for 15 minutes at a temperature of 135 to 145 degs. C.

The resulting product contains 3.5 per cent. combined sulphur. In the absence of the piperidine a period of one hour will be necessary to accomplish the same degree of vulcanization. Pyridine, quinoline and dimethyl aniline do not exhibit this accelerating property.

In the "Kolloid Zeitschrift," Volume 13, Page 49, F. Kirchhof contributes an article on the "Oxidation of Rubber." He points out that vulcanized rubber is more liable to oxidation than the unvulcanized product. By exposing vulcanized rubber containing varying amounts of combined sulphur, from which the free sulphur has been removed by extracting with acetone, it is found that about 1/3 of the total combined sulphur is readily oxidized to sulphuric acid, while 2/3 of the total combined sulphur is oxidized together with the combined rubber molecule. This result is in bearing with Erdmann's Thiozonide hypothesis of vulcanization, which regards 3 sulphur atoms of the following configuration: —S

—S

as entering into combination with the rubber molecule at the double bond. It is that sulphur atom which is in combination with the two other sulphur atoms which Kirchhof suggests is oxidized to sulphuric acid. The two remaining sulphur atoms being in direct union with the rubber molecule remain with it even in the process of oxidation.

In the "Gummi Zeitung," Volume 28, Page 237, G. Huebener subjects the above communication of Kirchhof's to a criticism and himself carries out experiments similar to those of Kirchhof's, using hard rubber instead of soft rubber, which was used by the former investigator. He is unable to confirm results obtained by Kirchhof, and finds much more than 1/3 of the sulphur to be easily oxidized into sulphuric acid. For this reason he is of the opinion that in the case of hard rubber by no means is all the sulphur which can be removed with acetone to be regarded as combined sulphur. He is of the opinion that in hard rubber only a small amount of the free sulphur is extractable with acetone.

RUBBER MANUFACTURING STATISTICS IN THE NEXT CENSUS.

AS announced in another column, the Rubber Club of America has commenced taking a census of production, by which the extent and character of the industry will be clearly shown. The two main points on which information is sought are the size of the staff and the value of output in the principal branches of manufacture.

The information periodically issued by the Census Bureau as to the rubber industry has dealt with these points and likewise a number of others, as shown in the abstract of the figures for 1899, 1904 and 1909 compiled by THE INDIA RUBBER WORLD, which appeared in the issue of May 1, 1912, page 374, and showed the distribution under various broad divisions of the grand total of more than \$200,000,000 a year.

But apart from the disadvantage of the census returns being issued only once in five years, is the fact that the classification is too broad, including: (1) belting, hose and packing; (2) boots and shoes, and (3) other goods. While dealing with the 1909 census figures, THE INDIA RUBBER WORLD found this wide classification too general and has for some years been in communication on the subject with the Director of the Census. Acting upon the suggestions of this journal, the Bureau has been preparing a special rubber industry form to be used by manufacturers for the census of 1914, in which the number of separate articles for report has been increased. Meanwhile the valuable work of the Rubber Club will (particularly if repeated periodically) prove of much benefit to the industry.



FIFTEENTH ANNUAL BANQUET OF THE RUBBER CLUB OF AMERICA

AT THE WALDORF-ASTORIA, NEW YORK, JANUARY 6, 1914.

The Rubber Club's Fifteenth Annual Banquet.

THE fifteenth annual banquet of the Rubber Club of America, held at the Waldorf-Astoria, in New York City, on Tuesday evening, January 6, had several points in common with last year's function—it was held in the same room and there was the same arrangement of tables. But what brings the similarity out more strongly is that there were exactly the same number of members and guests in attendance. They began to arrive about half an hour before the time set for the dinner, and the spacious reception room in the Astor Gallery was filled almost to overflowing with 190 representative rubber men.

To one accidentally overhearing some of the conversation it might have seemed that there was some political discussion regarding the different boroughs of New York City. Some stoutly championed the Bronx, while others were equally enthusiastic in regard to Manhattan, but when the name "Martini" was heard, the puzzle was solved. The reception before the dinner gave those who needed it an opportunity to sharpen their appetites—an opportunity very generally improved.

They came, as usual, from the four quarters of the compass; from New England and New York, from Pennsylvania and Ohio—and even from as far West as Chicago. The East and West joined hands in hearty fellowship, and if the East had rather the advantage numerically the West had the compensating advantage of the greater enthusiasm characteristic of that section; and this occasion gave another proof of the value of this Annual Rubber Club Dinner as a promoter and stimulator of mutual good will. The progressive spirit of the rubber industry and the rapid advance that it is making from year to year are in no small measure due to the friendly feeling, even in the midst of keen rivalry, that exists throughout all branches of the trade.

The assembly filed into the dining room at the appointed time

MENUS			
Huites de Contact			
Potage: Potage Vert, à l'Anglaise			
Radis	Oignons	Courgettes	Amandes
Fillet de Boeuf, sauce Hollandaise			
Salade de Tomates et Concombre			
Clapnet de Saumon, sauce Châli			
Medallion de Boeuf à la Rose			
Pommes de terre, Purée			
Pommes de terre, Purée			
Poitrine de Volaille farcie, sauce Diablée			
Coeurs de Laitue au Roquefort			
Bombe de Vanille, sauce Chocolat			
Gateaux Assortis			
Café			

NOTES

The Waldorf-Astoria

le 6 Janvier, 1914.

After dinner, President Hodgman proposed a toast to the President of the United States, and the diners arose in unison and heartily complied with his request. The speeches, of which there were not too many, were for the most part short and dotted with witticisms which kept the hearers in constant good humor.

THE PRESIDENT'S ADDRESS.

After the toast had been drunk (while the orchestra appro-



GEORGE B. HODGMAN,
President.



FREDERICK H. JONES,
Vice-President.



CHARLES A. COE,
Chairman of the Dinner Committee.

and sat down to enjoy the attractive menu exploited herewith. At each plate was a printed list of more than a dozen popular songs, and in the balcony was an orchestra which had some difficulty in holding its own against the professional singer and the nearly 200 amateurs, for everyone joined in all the choruses with a will.

After the toast had been drunk (while the orchestra appro-

priately played "America"), President Hodgman addressed the assembly as follows:

"Fellow members of the Rubber Club of America, and honorable guests: It is a great pleasure to welcome you tonight to the Fifteenth Annual Banquet of the Rubber Club of America.

"It is now nearly two years since our club took steps to change

it from a purely social to a business and social organization, with more emphasis on the *business*. While it is not my purpose to go into detail as to what has been done under this new regime (as it is my intention to take this up more fully at our annual meeting in April), I do wish to say that I feel that much

Jenks spoke of the vital questions of the day, one of which is the currency problem which is before the American people for solution. He suggested that if we are to have an elastic currency, which many are advocating, it should by all means be made of rubber.



ROBERT L. RICE.



WILLIAM E. BARKER.



ROBERT B. BAIRD.

Members of the Dinner Committee.

good has been already accomplished, and the work so ably inaugurated by my predecessor, Frederic C. Hood, has been broadened and carried on through the hearty co-operation of your executive committee, and the efficient work of our secretary, Mr. Vorhis. We have established our office in New York, at 354 Fourth avenue (where any of you will be welcome at any time), and have now the proper facilities for the further carrying on of our work.

"We have before us a number of propositions which are to be worked out for the benefit of the rubber trade of the United States, but as I have before stated, I do not intend to elaborate upon these now, as this is not a business, but a social occasion. I do, however, ask the co-operation of all our members, in all our efforts, for the good of our industry.

"The fifteen years which have passed since the founding of this organization as the New England Rubber Club, and particularly the past five, have been years of tremendous progress. It is unfortunate that we cannot have at our command statistics which will show how greatly our industry has grown, for if we had the figures I feel quite sure that we would all be surprised at what they would reveal. While the general public may not realize it, the rubber manufacturing business of the United States is now one of the great industries of our country and of the world. Our future possibilities are unlimited, and in the further development of our great opportunities the Rubber Club of America should perform a useful service."

That everyone agreed with President Hodgman's sentiment was indicated by the hearty applause which followed. He then introduced Justice Almet F. Jenks, of the Appellate Division of the New York State Supreme Court.

THE SUBSTANCE WITH A "COME BACK."

During his brief remarks, Justice Jenks paid high tribute to rubber and defined it in such new and amusing terms that he kept his hearers laughing continuously during the ten minutes of his speech. After stating that he hailed from Brooklyn, which is reputed to be the home of the rubber plant, Judge

In giving a new definition to this universally essential substance which we all have to depend upon for one purpose or another at frequent intervals of our existence, the speaker said: "Rubber is the epitome of life. Life begins with a rubber ring and ends with a rubber trust. Rubber is protection; rubber is resistance; rubber is restoration; rubber is the repartee of Nature, for it is the only thing that can always come back.

"One old Greek philosopher said: 'Give me a lever long enough and a place to rest it, and I can move the world.' This old philosopher was not up-to-date. He should have said: 'Give me a block of rubber and a place to rest it and the world can move on it.'"

EX-CONGRESSMAN LITTLETON ON OUR REPUBLIC.

Hon. Martin W. Littleton, former member of Congress, was next introduced by the chairman and expressed his opinion of the manner in which some things are done in this country. He paid a tribute to the head of our government by saying: "When a man is president of the United States, he is my president and yours—and we ought to stand by him." He illustrated the difference between a monarchy, a democracy and our own republic as follows:

"A monarchy is like a ship that floats safely until it strikes a reef; and then it sinks. A democracy, on the other hand, is like a raft; it never sinks, but your feet are always wet. We are living in a republic and the republic is on trial." Mr. Littleton made it clear to his hearers that, in his opinion, business in general is anxiously awaiting the outcome of the several momentous questions which are before the people today, and conveyed the impression that he referred partly to the Mexican situation and the apparent inclination of certain foreign powers to dictate what our own policy should be. He said: "In time of peace prepare to maintain it. I believe in a large navy, and if I had my way in the matter I would build a navy so large that no foreign power would try to dictate our policies, nor would they even dare to look across the water in our direction with any but peaceful motives."

MR. WILSON'S "HISTORY OF MEXICO."

After the hearty applause which followed Mr. Littleton's speech, proving that those present were in accord with his views, President Hodgman next introduced Henry Lane Wilson, former ambassador to Mexico. Mr. Wilson's address was distinguished from the preceding ten-minute speeches by being lengthened out to several times ten minutes. It took the form of a history of the Mexican people and began back almost at the time of their aboriginal ancestors, bringing them down through the ages to the modern turbulent times of the Latin-American race; giving a detailed review of the varied reasons for the present revolution in Mexico, and of those causes which led up to the ambassador's own leave-taking from that *Tierra Caliente*.

The speaker made quite an impression when he said that the United States had actually intervened in Mexico—not by arms but by dictation as to the manner in which they should run their affairs; and also that there was documentary evidence on file in Washington, secured by government secret service men, showing that a certain large and well-known oil company assisted Madero in his attempt to overthrow the Mexican government.

"The conditions in Mexico today," he continued, "are worse than reported by the press. The country is full of revolutionists, half-civilized Indians who make plunder their business. It is not because of patriotism that they are fighting, and so long as loot is in sight the uprisings will continue. The Mexican politicians fully realize this point and are using these ignorant natives in an effort to overthrow their enemies.

"If the government of General Huerta had been recognized at its inception it would have made peace throughout Mexico and thousands of lives would have been saved and millions of dollars of property, especially of foreigners and Americans, would not have been destroyed. The administration at Washington saw fit not to accept my recommendation to recognize the government of General Huerta and at that time I predicted exactly what has occurred there during the last six months and exactly the conditions that prevail there today.

"We have now actually intervened in Mexico. Don't make any mistake about that—not by arms, but we have nevertheless actually intervened in Mexico.

they should put into office and whom they should put out of office.

"Whenever before has this government ordered Americans out of a foreign country without guarantee of protection for their losses, or announced a policy which makes us virtually overlords of every republic from the Rio Grande to Cape Horn and makes it necessary to interfere in every turbulent republic in that great empire?

"These are policies born of scholastic dreams, or, perhaps, of ideas formed before unhappy divisions made possible the exercise of power by theorists.

"The president of this Republic—and I have the greatest respect for him—is a master of the English language and of eloquent and persuasive diction. He can smite the harp of idealism and from every idealistic mind in this Republic will come a response; from every mind wandering in the bogs of esthetic dreams.

"But these good people must know, ought to know, that at the judgment bar of history they will be responsible for all the destruction of property, for all the loss of life, for all the hatred and rancor in Latin America and suspicion in Europe; and finally, for the sowing of the seeds of antagonism and distrust between this country and the greatest country in possibilities near us for all time to come."

THE REV. MR. GILES PROVOKES GOOD HUMOR.

The chairman next introduced Rev. Warren W. Giles, of East Orange, New Jersey, who filled the assembly with continuous mirth by his witticisms and pointed anecdotes. He spoke in part as follows:

"While sitting here listening to the preceding speaker I have gained several new conceptions. One of them is a new conception of 'esthetic dreams' with which the President of our country has been charged. I have also gained an entirely new idea of 20 minutes." This sally—at the expense of the ex-ambassador, who had promised to speak twenty minutes and had spoken for several times that number of minutes—appeared to be greatly enjoyed by everyone present—with the possible exception of the ex-ambassador.



THEODORE W. BASSETT,
Member of the Dinner Committee.



HON. HENRY LANE WILSON,
Speaker.



HON. MARTIN W. LITTLETON,
Speaker.

"And we have sent down there private, special unofficial representatives of the President for the purpose of telling the Mexican people how they should govern their country, whom

In a more serious vein, however, Mr. Giles spoke briefly on efficiency, laying special emphasis on the fact that this is an era of efficiency, and especially of specialization. In no other

industry or line of endeavor, he explained, has specialization been brought out more strongly than in the utilization of the product of the rubber tree. It is efficiency that has built up our enormous factories employing thousands of workers trained for their particular duties.

Among other anecdotes, the speaker related an amusing incident which served to illustrate the care which is usually exercised by the heads of business houses in engaging efficient employees. The story is, in effect, as follows: The head of a certain large New York banking house desired to engage a man to fill a very important position. A young man from Boston was recommended to him as being particularly well fitted for the place and the banker wrote to that intellectual center for

information regarding the prospect. The answer came back, giving the young man's pedigree from the landing of the Mayflower down to the present; it told of his numerous distinguished antecedents and of the illustrious blood that coursed through his veins, etc., etc. Immediately the New York banker wrote back: "We do not want this young man for the purpose of demonstrating the Eugenic theory; we want him for business."

Mr. Giles was the last speaker and his position on the program could not have been better placed, for he sent every one away in excellent humor. And when the assemblage broke up—a few minutes on the virtuous side of midnight—everyone went home with a full realization that he had been cheered and invigorated in body and sustained, stimulated and enlarged in mind.

THE MEMBERS AND GUESTS PRESENT.

At the Speakers' Table.

Williams, Elisha S.
Littleton, Hon. Martin W.
Sawyer, Homer E.
Jenks, Justice Almet F.
Hodgman, George B.
Wilson, Hon. Henry Lane
Jones, Frederick H.
Flint, John H.
Bourn, Hon. Augustus O.
Appleton, Col. Francis H.
Giles, Rev. Warren W.

Alphabetical List of Those Present.

A

Adams, H. J.
Andersen, E. A.
Archer, A. W. Jr.
Archer, C. B.
Archer, Stephen O.
Armstrong, H. G.
Arnold, Charles H.
Arnold, W. H.
Appleton, Col. Francis H.
Appleton, Lloyd E.

B

Badenhop, Robert
Baird, C. W.
Baird, Robert B.
Baird, Robert L.
Baird, William T.
Ballou, R. H.
Barnard, O. A.
Barker, William E.
Bassett, Theodore W.
Bauer, F. M.
Bedell, Harold H.
Bourn, Hon. A. O.
Bourn, A. O. Jr.
Brunn, A. W.
Burnham, Ira F.
Byles, W. E.

C

Carberry, John D.
Cassidy, John J.
Chipman, R. L.
Coe, Charles A.
Conlin, Andrew J.
Cornell, A. Boyd
Cottle, Mr.
Cutler, D. A.

D

Dammann, M.
Davis, J. E.
Devine, Joseph P.
Dowse, B. C.

Draston, Ed. H.
Dunn, H. T.
Duryee, A. R.
DuPuy, H. Wilfred

F

Faber, Eberhard
Faber, Lothar W.
Falls, Thomas J.
Feinburg, D.
Ferra, Henry
Fillingham, M. P.
Firestone, H. S.
Fisk, H. G.
Flint, John H.
Fox, F. S.
French, H. W.
Fuller, Harold P.
Fuller, R. H. B.

G

Gardner, Geo. A.
Garretson, C. D.
Garthwaite, A. A.
Giles, Rev. Warren A.
Gillespie, R. H.
Gillespie, W. F.
Githens, H. A.
Gove, F. G.
Gough, Wallace L.
Grafton, Edward H.
Greene, N. Lincoln

H

Hardy, Mr.
Harrison, Clark W.
Hawkins, D. A.
Hawkins, J. J.
Henderson, Bancroft W.
Henderson, Francis R.
Henderson, Harold
Hewins, E. D.
Hichborn, George
Hicks, Ellsworth H.
Hillmann, William
Hodgman, George B.
Hodgman, S. T.
Hubbard, H. B.
Huber, Edward E.
Hutton, W. C.

I

Inwood, W. A.

J

Jacoby, Ernest
Jenks, Justice Almet F.
Johnstone, James T.
Jones, Frederick H.

K

Kahn, Julius A.
Kelly, W. J.

Kelly, Dr. W. J.
Kendall, J. A.
Kenyon, Jr., C.
Kenyon, George
Kenyon, H. L.
Kittle, F. L.
Korn, Ernst A.
Kush, Gustave

L

Lahey, Frank T.
Lee, J. Ellwood
L'Hommedieu, S. Y.
Lingley, F. W.
Littlejohn, L.
Littleton, Hon. Martin W.
Lloyd, A. E.
Loeb, Mr.
Loewenthal, C. H.
Loewenthal, Paul
Loewenthal, R. A.
Loewenthal, R. M.
Lowman, J. S.
Ludington, G. A.
Lynch, Charles E.

M

Manchester, A. A.
Martindale, Mr.
Maurer, Ed.
McKenna, Francis R.
McNamara, L. P.
Meyers, A. C.
Montgomery, Henry
Moon, A. E.
Moses, Fred. L.
Muehlstein, Herman
Muehlstein, J.
Mullen, William
Murray, James A.

N

Norton, Ellsworth S.

O

Oakley, C. H.
Odell, James E.

P

Palmer, C. E.
Palmer, William H.
Parker, Russell
Parson, Mr.
Peaty, F. H.
Perlish, Henry
Pfaff, Edward F.
Piper, W. E.
Pitcher, Conrad N.
Plumb, L. J.

Procter, William L.
Pusinelli, Fred.

R

Raymond, Howard E.
Reeve, Arthur
Rice, Robert L.
Rood, W. B.
Ryckman, W. G.

S

Sawyer, Homer E.
Schlosser, George
Schmidt, Paul
Schwab, F. M.
Sibley, Wm. M.
Smith, Geo. E.
Soote, R. S.
Stearns, E. Ward
Stiles, Lynn
Stiles, William
Stone, J. Everett
Stowe, Griswold
Sweeney, Edward C.
Sweet, W. A.
Sydeman, Joseph M.

T

Tallman, A. V. W.
Thalheimer, Albert
Thomas, J. W.
Thompson, Kennedy M.
Thomas, L. H.
Tweedy, O. S.

V

Van Derbeck, Frank H.
Van Etten, J. de C.
Vorhis, Harry S.

W

Wadbrook, Elston E.
Walker, David
Wanning, H. F.
Warren, A. W.
Weber, Edward E.
Weston, J. C.
Whitehead, Alfred
Whitworth, F.
Wies, George A.
Williams, Elisha S.
Wilson, Chas. T.
Wilson, H. C.
Wilson, Hon. Henry Lane
Wood, Chas. E.
Wright, Samuel

Y

Young, Philip E.
Yule, W. H.

Z

Zeiss, Albert
Zinner, M. J.

Some Neglected Near-By Markets—I.

COLOMBIA.

THE opening of the Panama Canal is not merely an occasion for fireworks, orations and World's Fairs. It is the beginning of a new era in the commerce of the world. For ten years we have watched the work of construction going on. With its completion the burden of duty is transferred to other bearers. The directors, the engineers, the laborers have done their part. The nation has paid the bills and now looks to the American business men to take up their share of the work in utilizing the canal to add to the nation's wealth. It was not built in order that we might enjoy the moving spectacle of fleet after fleet of German, British and other foreign merchant ships passing through its locks. It was built that it might be used by American business, for profit to itself as well as to the nation at large.

It is axiomatic that if the canal is used somebody must use it and it is high time for each American producer of exportable goods to ask himself what he is going to do toward utilizing the canal which the nation has built for him. All that is asked of him is that he assist in the work of exchanging the wealth of our land for greater wealth from other lands—for instance, to send away a few cases of rubber goods and receive a greater value in gold from the mining districts, where those goods are needed. In Colombia, the

most accessible of the South American republics, lies, ready for taking, a store of wealth vast beyond imagination, wealth as yet barely touched, concrete wealth calling aloud to the American exporter to come and get his share. Colombia has an area greater than that of all the States east of the Mississippi and north of the Ohio, with Virginia and West Virginia added. A land filled with precious metals and gems; a land which, in the opinion of informed geologists, holds the future supply of copper for the world. Gold is found in every part of the Republic and has been mined for four hundred years, yet this source of wealth has merely been scratched. The world's supply of emeralds comes from Colombia, a million dollars a year being exported of these gems whose value, weight for weight, is far greater than that of

diamonds. The emerald mines of Colombia are a government monopoly, worked by companies on concessions. At present the gems are gathered in the most primitive way, but it is certain that improved machinery will soon find its way to the mines and exports of this precious stone be multiplied many times. Not one-tenth of one per cent. of the known area of the mines has yet been exploited. There are besides mines of diamond, ruby and amethyst. The gold mines are estimated to have yielded a total of \$250,000,000 since the middle of the sixteenth century, and their development has hardly begun, most of this great total having been taken by primitive means and mere surface scratching. It is not too much to expect from the mines of

gold and gems that they will yet show a development comparable with those of South Africa. Silver is found in many places in remarkable richness, but the backward development of the country, the depression of silver the world over and the greater certainty of profit in gold mining have prevented the silver mining industry from attaining the magnitude it would have done otherwise. In the production of platinum Colombia comes next after Russia and shares with that country a practical monopoly of the world's market. Iron, mercury and lead are plentiful, while the coal fields are

extensive and valuable. The petroleum fields also are of great importance.

The forests are bewildering in their extent and richness. Not only mahogany and other valuable timber trees, including oaks in the higher temperate regions, but other forest products are found, in variety probably equalled nowhere else on earth. Rubber—*Hevea*, *Sapium* and especially *Castilloa*—is found in many places, but at present the value of this item in exports is exceeded by "vegetable ivory." Another important item of the natural forests is the tonka bean, which contains coumarin, giving it the pleasant odor of sweet vernal grass. It is used in perfumery, in the manufacture of soap and snuff, and in the manufacture of substitutes for vanilla flavoring.



MAP OF COLOMBIA.

Of agricultural products there is nothing in the tropic or temperate zones which will not grow in Colombia, which has, on account of its varying elevations, every climate from the luxuriance of the tropics to the bleakness of eternal snow. Coffee, cacao, rubber, cotton, corn and other grains, with all manner of fruits, both tropic and temperate, are grown. The banana export trade is large and is increasing rapidly. The vast, grassy plains furnish forage for millions of cattle, and the livestock industry, already of great importance, can be increased indefinitely.

This great country has at the present time a population of a little over four millions, or about that of Massachusetts and Rhode Island. This population includes Indians, wild and tame, to the extent of 50 per cent. The negro element is not large, relatively speaking. In this sparse population, with its usual tropical fondness for leisure, lies the explanation of why the incalculable riches of the country have lain so long undeveloped. But the country is waking up at last. The period of revolutions is definitely past and the people are showing real aptitude for democratic government. A sure sign of progress in any country is the rapid growth of cities, and this in Colombia is marked. The wants of a simple peasantry are few, but with the growth of cities comes a demand for the luxuries and refinements of life.

As the vast wealth of Colombia goes out into the world's commerce in ever-increasing volume, goods of every kind from the markets of the world will maintain the return flow. At present the United States receives about half the total exports of Colombia, but furnishes little more than one-fourth of that country's imports. Of imports in 1911, classified as "rubber, celluloid, etc.," American manufacturers furnished the impressive total of \$19,444.84, this being about one-fifth of the total importation. There are, of course, many good-sized American villages which exceed this figure, but it is a great error to suppose that because an infant is small it must ever remain so. Here are the figures for rubber and allied importations for 1911:

Germany	\$30,097.79
France	22,296.39
United States	19,444.84
United Kingdom	9,293.20
Spain	36.00
Panama	8.80
Other countries	3,327.74
Total	\$84,504.76

When we consider that the chief ports of Colombia lie due south of New York and that American rubber manufactures go all over the world, it would seem that in the matter of Colombian trade Americans were not getting their share.

The great industrial and commercial development of Colombia is now definitely under way and the demand for imported goods of every kind is bound to grow enormously within the next few years. About seven hundred miles of railway are now under operation and fully two thousand more are under construction or survey. The cities are beginning to pave and asphalt their streets. Bogota, the capital, with a population of 125,000, which as yet has no direct communication with the coast, has vast plans for asphaltting her streets and improving her suburban roads. An automobile road, one hundred miles in length, between the important cities of Cartagena and Barranquilla, is a work of the immediate future. Towns missed a few miles by the railroads, completed or projected, are building roads for automobile trucks to bring them in touch with the railroads. The good roads movement is in full swing and will grow by what it feeds upon. There are now probably a thousand automobiles in the country, nearly all being of American manufacture. Wherever the proud automobile goes, its humble relative, the bicycle, may be found. The numbers of each will increase with geo-

metric ratio for several years to come and the market for tires will be great, growing and permanent.

The development of agriculture on a scientific basis calls for engines and machinery, where belting will be required. Especially is this the case where engines for pumping for irrigation are needed during the dry seasons. In this connection it may be said that as the higher civilization advances and waterworks multiply the use of garden hose is bound to grow. The magnificent forests will soon be echoing with the sound of saw-mills and again great quantities of belting will be called for. This is also true of the continued increase of mining industries. Every town in Colombia is thinking of electric light. The larger places have lights and the smaller ones are eagerly planning for them. These are run chiefly by water-power, of which Colombia has enough going to waste to turn as many manufacturing wheels as there are now in the entire world. Factories run by water-power are rapidly increasing. Belting and insulated wire in ever-increasing quantities are clearly called for in connection with this vast hydro-electric development of the immediate future.

The sale of rubber shoes is not likely to be extensive in a country where most of the population goes barefoot, but rubber boots for use in hydraulic mines and by sportsmen and fishermen may meet with sale. It is not easy to say what are the possibilities of the market for rubber coats and ponchos. Finally, the growth of cities, of wealth and of facilities for transportation, means a proportionate increase of demand for druggists' sundries and a thousand articles of luxury and convenience.

To establish a trade in this country of boundless future growth and possibilities the manufacturer can well afford to spend many times the profit of his early sales. To get this trade he will go after it exactly as if it were in Nova Scotia—with a difference. The first difference is that all the letters, catalogs and other printed matter must be in Spanish. English circulars and catalogs are as completely wasted on the Colombian merchant as would be similar articles in Spanish on the merchants of Vermont. Another thing to remember is that the language of politeness must be used. We may think that they are too flowery in their business letters. They think that we are too curt and brusque—and they are right. A prominent New York business house recently announced that it could see no use of consuming time in the further use of such phrases as "Dear Sir" and "Yours truly" which, accordingly, have been discontinued. This crude barbarism probably saved the hire of one clerk and lost a lot of customers. If the accustomed phrases of Castilian politeness are omitted from a letter to a Spanish-American merchant the psychological result is distinctly unpleasant. Then the goods must be described simply, explicitly, understandably and truthfully. They should, where measurements are called for, be described in terms of the metric system. A catalog in English, offering goods at so much per pound, is about as useful to a Colombian merchant as would be one for an Iowa merchant printed in Russian and offering certain commodities at so many kopecks per pood.

In fixing the price the manufacturer should carefully figure cost of production, interest, packing, freight and customs, and leave a safe but not excessive margin of profit. If he cannot make the price attractive, he might as well spare himself all effort. Having figured an interest charge into the selling price he can be magnanimous in the matter of credit. No use demanding cash in advance of a merchant who can buy on long credit all the German or British goods he desires. This credit is necessary on account of the paucity of real money in the republic, of the fact that the ultimate consumers are dependent on seasonal crops and that interest on ready money ranges from eighteen to twenty-four per cent. per annum. The usual method with English houses is to give six months' credit without interest and an option of extension for another six months with interest at a low rate. Payment is usually made by a draft accepted

for collection by the local bank. When the merchant is offered an article from the English manufacturer on these terms and by an American at the same price for spot cash, which the merchant must borrow at twenty-four per cent., there is little doubt as to which will get the order. There are many New York banks where exchange may be had at a very reasonable rate.

The currency of Colombia is based on the peso, which is one-fifth of a pound sterling, or a little less than the American dollar. There is, for local use, a depreciated paper currency which the government is working to retire. A story is told of an American who ordered toast and coffee in a Cartagena restaurant and was horrified to receive a check for eighty dollars. He was game and passed up a one-hundred dollar American gold certificate. There was great consternation in the cashier's office and a hurried trip to the bank across the street. At last the waiter came back with many apologies for delay and brought back the change, \$9,920.00, of Colombian paper money. That is the rate today, one hundred paper dollars for one dollar in gold. Of course it never will be redeemed at par. But neither was the continental currency issued by our patriotic forefathers—\$242,000,000—ever redeemed. Not a cent of it. The issue of irredeemable paper currency is a bad and clumsy kind of taxation on the business of the country, the depreciation being gradual as it passes from hand to hand. But as foreign goods are paid for on a gold basis, the exporter need not worry about currency. Information about tariff rates and consular invoices may be obtained from the Department of Commerce, Washington, D. C.

In the matter of packing, the first thing for the shipper to remember is that he has a special problem on hand and that he must give it special attention. The goods must be packed lightly and strongly, for they are going a long way and freights, certainly, and tariffs, possibly, are involved when useless weights are added. They must have, in most cases, security from the tropic rains which are pretty certain to beat on the package before it reaches its destination. When possible the package should be split into convenient units for handling, as the difficulties of managing heavy packages are greater in new countries and frequently must be paid for in damage or extra cost of handling. Second-hand cases should never be used, especially those which bear irrelevant and obsolete labels. The labeling should be very distinct, with the name of port, ultimate destination and consignee conspicuously shown. Labels indicating contents, method of handling, etc., should invariably be in Spanish. Suppose a package comes from Colombia to New York marked "Con Cuidado." What would the husky freight handlers of Hoboken make of it? It means "Handle With Care," but how is Mike going to know that? On the other hand, if it is marked "Handle With Care" and sent to Colombia, Miguel will not know that it means "Con Cuidado" and will, no more than Mike, care what the preposterous foreign label means. In addition to all else, the shipper should take warning from the experience resulting from the mistakes of a thousand who have gone before and not "take the liberty" to deviate in the least from the instructions he receives from his customer. The latter knows why he wants his goods packed a certain way. It may have to do with interior transportation, with climatic conditions, with customs regulations or with something undreamed of by the shipper. In fact, the more strange-appearing the request the greater, usually, is the necessity for strict compliance. The customer is vexed at being taken for a fool, still more vexed at the added cost for inconvenience to which he is subjected—and he gives his next order where his instructions may be heeded. Invoices should be in both English and Spanish, and a politely worded letter should be forwarded at the time of shipment.

The postal service of Colombia is efficient and shows steady improvement. A parcels post system exists between the United States and Colombia by which parcels up to eleven pounds may

be sent at twelve cents a pound. To articles shipped in this manner a charge of twenty per cent. extra is made in customs duties, this in lieu of all other charges for invoicing, etc. There are ten thousand miles of telegraph wire, besides several wireless stations. Telephone systems exist in the principal towns. The cost of living to commercial travelers is somewhat greater than in the United States. As low as seven dollars, as high as fifteen dollars a day is considered reasonable by different authorities. A traveling agent should be conversant with both the Spanish language and Spanish customs of polite dealing, as well as having the indispensable adaptability and tact of the accomplished salesman. As there are no mercantile agencies, the matter of credit must be left to the judgment of the agent or reference may be made to the local bank. The Colombian merchants as a whole have a reputation for integrity as high as those of any country on earth.

Of the Caribbean ports, Barranquilla, with a population of 50,000, stands first in exports and imports. Cartagena, famous in history, has a population of 40,000, and is the seat of extensive American capital. It stands second. Santa Marta is a flourishing town, the center of the banana-exporting trade. Cucuta, with 20,000, is an interior town on the Venezuelan border, reached by railroad.

The port which will derive the most benefit from the opening of the canal is undoubtedly Buenaventura, on the Pacific coast. A small town at present, its trade is fast mounting into the millions and these will become tens of millions with the completion of the canal and of the system of railways which connect the port with the rich interior of Colombia. Plans have been made for dredging, docks, public buildings, water-works, sanitation and electric light, all-sufficient for a great city and under the control of the Colombian government. The present railway reaches Cali, the chief town of the fabulously rich Cauca Valley, and thence extensions are being built to reach the chief towns of the interior, including Bogota, the capital. The American Consul-General at Bogota is Charles H. Small. Other consuls and consular agents are: Barranquilla, Isaac A. Manning; Cartagena, Graham H. Kemper; Santa Marta, William H. Trout; Medellin, Silas H. Wright, and Cali, Edward H. Mason.

The attitude of Colombians toward the United States, on account of political happenings of recent years, cannot be ignored. Every effort should be made both by the administration and individuals to soothe the wounded *amour propre* of the Colombians, who regard us as having been instrumental in that most grievous of national happenings, the dismemberment of their territory. But the past is past, the canal has been dug and Colombia is going to prosper vastly as a consequence. Possibly a majority of Americans and a majority of Colombians are unable to approve of all that was done by their respective governments in 1903. A thought that may not be amiss is that the great reef of rocks called the isthmus, by preventing communication between the oceans, was a gigantic international nuisance, worth less than nothing by the four hundred million dollars it cost to cut the canal and abate that nuisance. That any nation having political control over those rocks and swamps should be entitled to a colossal sum for permitting the nuisance to be ended cannot well be defended as a matter of equity or morals. The Colombian does not need be told this. We have the canal and can afford to be contrite and courteous. And in matters of commerce we have the goods.

Go into any good residence section of New York City and you will find greybeards sitting around telling about the fortunes they could have made if, in their youth, they had invested in Harlem lots. They could have invested, but they did not. They thought that the growth of the city was completed. Are they investing in Bronx lots now? Oh, no! They are convinced that the city is done growing northward. The manufacturer who does not take advantage of the tremendous opportunities

now opening in Spanish America can at least, in his old age, have the pleasure of sitting around and gossiping about the fortunes he might have made but did not.

There are four steamship lines running from New York to Colombia. The Hamburg American Line (Atlas Service), with offices at 45 Broadway, New York, has sailings on every Thursday for Cartagena and Puerto Colombia, and on every Saturday for Santa Marta, Buenaventura and Tumaco (via Colon).

The United Fruit Co., 17 Battery Place, New York, also has two sailings each week—one on Wednesday for the five ports mentioned above, and one on Saturday for Buenaventura and Tumaco (via Colon).

The Royal Mail Steam Packet Co., 24 State street, New York, has fortnightly sailings, its boats leaving every other Saturday for all of the different Colombian ports; and the Panama Rail Road Co., 24 State street, has sailings every week for Buenaventura and Tumaco (via Colon).

In a general way, the rates are from 15c. to 23c. per cubic foot or from 35c. to 50c. per hundred pounds, according to the ship's option. In addition there must be taken into consideration consular fees of from 1 per cent. to 3 per cent. on the value of the invoice, together with various incidental Government charges, including tonnage dues, lighthouse dues, bill of lading stamp and manifest fees aggregating from 5 to 10 per cent. of the freight rates. The Colombian Consul in New York is Mr. S. Escobar, 24 State street.

TRADE NEWS NOTES.

The value of the rubber exports from Guatemala in 1911 amounted to \$159,621, and in 1912 to \$140,768. Chicle was exported in 1911 to the value of \$150,903 and in 1912 to the value of \$274,853.

A United States consular report calls attention to a new style of cart being introduced into Ceylon by a manufacturing firm of Norwich, England, for conveying rubber latex. These carts are strongly made, with wrought iron frame and shafts, steel wheels and with removable galvanized iron swinging tanks fitted with airtight lids, and are in four sizes—30, 40, 60 and 100 gallons. They are designed to be drawn by one or two men, after the style of the jinrikisha.

The yield of plantation rubber in Java for the month of September, 1913, amounted to only 408,515 pounds, a decrease of 276,250 pounds from the production of August. This falling off is attributed to the effects of the drought experienced in the rubber districts of Java during the six months from April to September.

BRITISH GOVERNMENT SUPPORT FOR EASTERN PLANTERS.

At the recent annual dinner in London of the Straits Settlements Association, Sir Henry McCallum, late Governor of Ceylon (who presided), confidently predicted that rubber would overcome its depression, adding that a big fight with Brazil rubber was ahead and that planters required all possible government support. He further suggested that the government of the Federated Malay States should advance finances for a School of Agriculture, until the rubber companies would be able to contribute.

GRISAR & CO.'S PRICE CHART.

Displaying in a graphic manner the respective variations of Pará rubber in London and of plantation rubber at Antwerp, the chart of Messrs. Grisar & Co., of the latter port, for 1913 is of more than usual interest. The two grades followed a uniform downward movement from the beginning of the year until May, when they parted company; the former commanding a premium over the latter during the rest of the year. In this chart the history of the struggle between the rubbers is clearly shown.

RECEPTION TO DR. PEDRO DE TOLEDO.

Advices from Rio de Janeiro state that representatives of the rubber states of Brazil had tendered a reception to Dr. Pedro de Toledo, former Minister of Agriculture, to whom fell the task of carrying into effect the decrees intended to remedy existing conditions in Brazil. These decrees, moreover, were practically drafted by him as expressing the views of the rubber planters regarding their needs.

During the reception an artistic bronze statuette was presented to Dr. de Toledo, as a token of the appreciation in which his work was held by those interested. In the course of his speech of acknowledgment he remarked that while there was no doubt Oriental competition was threatening the interests of Brazil, Brazilian energy and economy were bound to prevail. He further alluded to the fact that the present standing of the East as a rubber producing center was due to the original transporting of Brazilian plants to Ceylon.

The importance of concerted action by the rubber-producing states was strongly urged; as well as the maintenance of quality. Co-operation on the part of the government was assured; in order that the cultivation, gathering and shipment of rubber might form a single issue for the general promotion of a business which is still regarded as the industrial glory of Brazil.

RUBBER EXPORTS FROM BRAZIL.

The Chamber of Deputies of Brazil has appointed a special committee to study the subject of protection of the rubber industry of that country. Brazil's total rubber exports for 1912 amounted to 42,286 metric tons, worth \$78,221,821, and were divided, as to varieties of rubber, between Seringa, Maniçoba, Mangabeira and Sorva in the proportions of 38,152, 3,725,389 and 20 metric tons, respectively; about 52 per cent. of this total amount coming to the United States, 35 per cent. being shipped to the United Kingdom and the greater portion of the remaining 13 per cent. to France. The rubber exports of Brazil from January to July, 1913, aggregated 22,790 tons, which was 1,972 tons less than the shipments for the same period of 1912.

NEW FIRM AT MANAOS.

By circular dated December 9, 1913, the establishment is announced of a new firm at Manáos, under the style of Pralow & Co. The general partner is Mr. H. Pralow, and the special partners are the Manaos firms: Tancredo Porto & Co., J. G. Araujo, Gomes & Co., Mendes & Co. and J. A. Leite. The firm will devote its attention to the commission and consignment business, as well as to the purchase, sale and export of Amazonian products. It is stated that the partners of the firm receive from the interior and control, together, about 4,000 tons of up-river rubber.

MEXICAN RUBBER EXPORTS TO BE REDUCED.

There will probably be a marked reduction in the exports of crude rubber from Mexico this year. This is due not so much to the revolution—which up to the present time has not seriously disturbed the large plantations in the Province of Chiapas—as it is to the new tax of 15c., Mexican money, per kilo (2.2 lbs.) on all crude rubber exported from that country, this tax being particularly burdensome as it is a gross tax levied not only on the rubber but on the boxes in which it is shipped. As a consequence of this new condition the large planters state that they will not attempt to ship any rubber the coming year, or as long as the present low prices continue to rule. Of course this rest will doubtless be beneficial to the trees; still it does not by any means indicate that the loss will be made up when shipping is resumed.

The contract made by the Mexican Government on February 1, 1909, with William H. Ellis for the operation of a factory for the manufacture of rubber goods has been extended until February 28, 1914.

New York's Fourteenth Annual Automobile Show.

LESS than two decades ago the appearance of any form of the then so-called "horseless carriage" was the signal for every pedestrian within seeing, hearing and smelling distance to stop and gaze with mingled wonder and amusement. The story of the marvelous growth of the automobile is so well known to the average person that it is useless to reiterate what has been repeated countless times in the newspapers and trade publications, save to point out that no other factor of modern industry has passed through such marked changes in such a short lapse of time. This relates to all branches of the industry; pleasure cars, commercial vehicles, tires and accessories of all kinds. The industry began with experiments, leaped to radical designs, and innovations, but is now gradually settling down to a conservative progress.

Thanks partly to this conservatism, the Fourteenth National Automobile Show, which was held in New York City under the auspices of the Automobile Chamber of Commerce from January 3 to 10, was held under one roof in Grand Central Palace instead of in two buildings over a mile apart. Another innovation at this year's show was the exclusion of motor trucks and the shortening of the time of the exhibit from two weeks to one. Altho there were not quite so many exhibitors, the four lower floors of the Palace were entirely given over to the show, and the attendance for the week reached far above that of last year.

As announced in the January number of THE INDIA RUBBER WORLD, a number of the larger tire and rubber companies withdrew from the show this year; nevertheless, at the end of the week those companies which took the time and trouble to arrange their displays, reported in many instances that they had been well repaid, by reason of the amount of business actually done and prospects gained. A feature of the show, which differed in some respects from those of former years, was that there were fewer curiosity seekers, the great majority of visitors being interested in some particular line of accessories or having the purchase of a car in mind. This fact alone would seem to indicate that the annual shows, like the industry itself, are settling down to a more business-like basis.

The Grand Central Palace lends itself particularly well to exhibits of this kind, and it does not need any interior reconstruc-

tion, involving the expense of thousands of dollars, as was formerly the case, when the show was held in the historic Madison Square Garden. The simple decorations in the Palace made the interior into a "Corinthian Court," which was extremely harmonious and pleasing to the eye. A general view from the entrance and also a view from the balcony looking down on the main floor are shown in the accompanying reproduced photographs.

The following is a description of the exhibits made by those companies which are allied with the rubber industry in the manufacture of tires, tubes and other automobile rubber goods:

The Double Fabric Tire Co., of Auburn, Indiana, featured its Inter-Lock inner tire, which is a protector of reinforced rubber and fabric to be placed inside the tire casing and around the inner tube. It is claimed that this protector will effectually ward off punctures, prevent blow-outs and thus proiong the life of any tire on which it is used. Other products of this company are blow-out patches, boots, etc.

The Miller Rubber Co., of Akron, Ohio, exploited its two-cure process in which the layers of fabric forming the foundation of the tire are built up on an iron core and then placed in a heavy mold and vulcanized in the same way as in

the full-mold process. The tread is then cemented on and vulcanized. This company also gave out circulars announcing that it is prepared to supply non-skid tread bands to be vulcanized on old tires. These tread bands are semi-cured and the vulcanizing process is completed when they are applied to the old tire. At this booth there was also shown a line of Miller inner tubes.

The Voorhees Rubber Mfg. Co., of Jersey City, New Jersey, laid special emphasis on the construction of its Brown Scientific inner tubes. These tubes are built up in tube form on round mandrels with eight laminations, which process seals up any pin holes which might occur in any single layer. These tubes are 93 per cent. pure rubber. In order to demonstrate the air-holding qualities of this tube, the exhibitors had a short section of 3½-inch inner tube clamped together at the ends and inflated to a circumference of 60 inches.

The Columb Tyres Import Co., of New York City, had on display a full line of Prowodnik tires in smooth and non-skid treads. A new tire in this line is one with steel studs set into the rubber



ENTRANCE OF GRAND CENTRAL PALACE DURING AUTOMOBILE SHOW.

The United & Globe Rubber Mfg. Cos., of Trenton, New Jersey, showed a line of Globe tires and inner tubes. The concern distributed booklets illustrating and describing the construction of these tires and tubes and showing the advantages gained in this particular construction.

The Cataract Rubber Co., of Boston, Massachusetts, displayed its complete line of tires, both solid and pneumatic, and also a line of gray and red inner tubes. The Cataract tire is made by the single cure process with a double breaker strip, reinforced bead, thick cushion tread and heavy sidewall construction. At this booth there were distributed circulars giving a number of good rules for the care of tires.

The Braender Rubber & Tire Co., of Rutherford, New Jersey, displayed several styles of Braender tires. In a circular dis-

a new tire which is claimed to be more resilient than the ordinary tire and at the same time puncture-proof, and proof against skidding, blow-outs and rim cuts. The tire has a lining of leather and also a cover of leather containing five rows of steel studs. The tire is very strongly built and carries a 10,000-mile guarantee.

The Marathon Tire & Rubber Co., of Cuyahoga Falls, Ohio, showed its different styles of Marathon tires and tubes for automobiles and motorcycles. These tires are made with a special reinforced base and tread and are guaranteed by the makers to give 4,000 miles of service. The inner tubes are nearly an eighth of an inch thick and are built up with from six to nine plies of rubber stock.

The Overman Tire Co., of New York City, had on display the



GENERAL VIEW OF FIRST FLOOR AT GRAND CENTRAL PALACE DURING AUTOMOBILE SHOW.

tributed at this booth it was pointed out that the first set of these tires ever used in a race established world's records for tire endurance. This set of tires went through the 500-mile race at Indianapolis last year without a change. A number of other records were established during the past year, for which the makers claim first place for the endurance of their tires.

The Thermoid Rubber Co., of Trenton, New Jersey, showed a line of Nassau tires and tubes in all sizes, of both the clincher and straight side types and with both smooth and non-skid treads. This company also featured Thermoid brake lining, which is constructed of asbestos interwoven with brass wire and impregnated with an oil and waterproofing substance containing just sufficient rubber to insure that the lining will remain immune from deteriorating influences. The lining contains a little less than one per cent. of rubber.

The Bricton Mfg. Co., of Brookings, South Dakota, exhibited

Overman cushion tire for both pleasure cars and trucks. These tires are made from solid rubber and the special tread construction, it is claimed, provides resiliency as well as non-skidding qualities. These tires are guaranteed to run 10,000 miles.

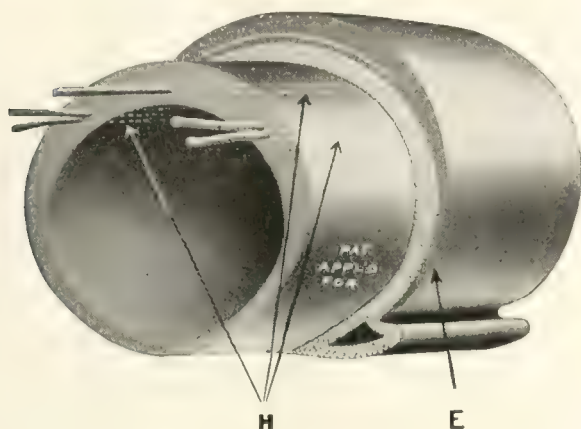
The Century Rubber Works, of Chicago, Illinois, displayed a line of Century tire liners, double lock tire boots, clincher and laced tire boots, and a new cementless rubber patch of unvulcanized gum.

The Essex Rubber Co., of Trenton, New Jersey, showed its full line of inner tubes, inner sleeves, blow-out patches, liners, tire plasters, rubber floor matting for automobiles, gas tubing, engine packing, hose, rubber goggles, spring pumpers and Essex brake lining, which is made from pure asbestos woven on brass wire treated with a waterproofing and fireproof substance.

The National Rubber Co., of St. Louis, Missouri, showed its regular line of "Narco" products, consisting of Tirenex, which

is a liquid compound of rubber to be applied with a brush to the exterior of a tire to fill cuts, to waterproof exposed fabric and also to give the tire a new appearance. This company also showed a tire cut filler which comes in collapsible tubes and which, when forced into a cut, quickly solidifies and becomes a part of the tire. Other "Narco" products shown were a liquid rubber compound for covering automobile tops and curtains and a product called "Leakanot" which is intended for waterproofing shoes, boots, gloves, caps, traveling bags, harness, golf bags and numerous other articles.

The Rubber Tire & Accessories Co., of New York City, featured a new type of inner tube containing five endless cables imbedded in the thickened tread portion of the tube and extending around its circumference. These cables, the makers assert, make the tube proof against blow-outs by reason of its reinforcement, thereby increasing the tire mileage. The extra heavy tire displayed by this company is shown at E in the accompanying illustration.



THE NEW GREENSBURG REINFORCED INNER TUBE.

tration, and the reinforcing cables in the tube are indicated at H. The tire and tube are made by the Greensburg Tire & Rubber Co., Greensburg, Pennsylvania.

The Leather Tire Goods Co., of Niagara Falls, New York, demonstrated the Woodworth anti-skid tread for automobiles and motorcycles. This tread is a steel-studded leather cover for tires which prevents skidding and punctures and protects the tire from injury and wear. It is held in place by a series of coil springs along each side so that it is always under an even tension. This tread for automobile tires has been on the market for a number of years but the motorcycle tread is a newer product.

Chas. O. Tingley & Co., Rahway, New Jersey, exhibited a line of C. O. T. products consisting of tire solder, vulcanizing cements and compounds, patches, gas tubing, rim paint, tire powders, blow-out patches, rubber goggles, etc.

The Gray Specialty Co., Newark, New Jersey, also had on display a line of tube patches, tire repair outfits, tire lugs, rubber bumpers, blow-out patches, rubber gas bags and an outfit for vulcanizing tire repairs by the cold cure process.

The Newmastic Co., of New York City, demonstrated a number of pneumatic tires filled with "Newmastic." This material is a rubber compound which comes in liquid form and is forced into the tire under pressure. It solidifies in a short time but remains elastic and resilient.

The C. A. Shaler Co., of Waupun, Wisconsin, had its full line of vulcanizers on exhibition. This company makes vulcanizers of all types, operated by steam, electricity, gasoline or alcohol. They are also made in different sizes for garage use or for carrying in the tool-box of the car.

The Marvel Auto Supply Co., of Cleveland, Ohio, demonstrated the Marvel steam vulcanizer, which is of convenient size

for carrying with the tire outfit or for use in the private garage. Steam may be generated in a few minutes and the outfit may be used for both tires and tubes.

The United States Gauge Co., of New York City, demonstrated the Invincible tire tester, which is a small gauge, the shape and size of a watch. To ascertain the air pressure in a tire, the gauge is pressed down over the tire valve and the indicator immediately points to the correct pressure on the valve. This gauge is built on the principle of the seamless tube steam gauge.

There were also several concerns exhibiting waterproofed top and curtain fabrics. The F. S. Carr Co., of Boston, Massachusetts, gave a practical demonstration of the water holding qualities of "Neverleak" top material, which is a heavy rubber-coated fabric. It is said to withstand baking, freezing or exposure; and the severe tests to which it has been put seem to bear out the claims of the manufacturers.

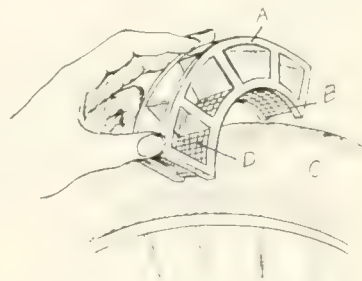
Wm. R. Laidlaw, Jr., of New York City, showed a line of Burbank automobile cloths for tops and seat coverings.

The L. J. Muttly Co., of Boston, Massachusetts, showed a number of samples of automobile top fabrics, rubber cloths and rubber tubings.

One interesting device seen at the show was a rubber-plated pedal pad made by the Auto Pedal Pad Co., of New York City. The metal pad is made with a recess which is filled with a corrugated block of rubber. This pedal is said to be superior to the ordinary all-metal type in that it prevents the driver's foot from slipping and also gives relief from the constant vibration transmitted to the pedal from the running gear and through road shocks.

PUNCTURE FINDER FOR THE MOTORIST.

The little device shown in the accompanying drawing should give hope to those motorists who have often spent many weary minutes by the roadside hunting for the elusive puncture by the bubble method. This puncture finder comprises a quadrant-shaped box A divided into four compartments. The inside curve B is made to fit the tire C and at the lower portion of each compartment is a piece of fine gauze D, above which is placed a piece of very light cotton. When the device is moved around the tread



THE HARRIS PUNCTURE FINDER.

to a spot directly over a leak, the light cotton will be agitated by the escaping air, thus indicating the exact position of the puncture. At present the device is being made only for motorcycles, but there is no reason why it cannot be built for automobile tires upon the same principle. Obviously, the device is effective only in use with smooth-tread tires. [A. Harris, 23 Broad street, Birmingham, England.]

UNUSUAL TIRE MILEAGE.

Unusual tire mileage is reported by the Union Transfer Co., which handles the Pennsylvania Railroad Co.'s business in Philadelphia, Baltimore and Washington. This company has secured from an equipment of four Goodrich Wireless Motor Truck Tires on one of their trucks used in hauling baggage, records of 12,900, 17,000, 18,800 and 25,300 miles respectively. Mr. Brouse, the Goodrich representative in Philadelphia, states that any motor truck, under normal road conditions and properly handled—without over-loading or over-speeding—should secure fully as satisfactory mileage from this tire.

THE RUBBER TRADE IN GERMANY AND RUSSIA IN 1913.

By an Occasional Correspondent.

AS a result of the fall in crude rubber prices, German rubber manufacturers had in many cases offers of orders at prices which they had to decline. The cost of other raw materials had risen, rather than fallen; this remark applying to cotton goods, benzine, coal and other elements of manufacture.

The prices of automobile tires have suffered from foreign competition. It would seem that this article has reached a point where no profit remains, only high quality enabling producers to compete. The opinion has been expressed that the guarantees now customary exercise an injurious effect on the trade and that it is time they were abolished. No extension seems likely of trade in bicycle tires.

On account of the increased demand for the use of motor trucks, the trade in solid tires is increasing. The prices to dealers and consumers have been, however, so low as to preclude manufacturers from making a fair profit.

Rubber heels have been selling on the same scale as in 1912, but the tendency has been to use cheap goods instead of better qualities. Prospects for the coming year are about on a level with 1913.

Brewers' hose was more active, on account of the improved condition of the breweries. In gas tubing the ideal article is still being looked for, none of the existing forms being satisfactory. Steam hose has suffered from the competition of metal hose with movable joints. In place of the dearer acid hose, glass tubing has been in many cases used. Spiral rubber hose has suffered from the competition of other materials. Garden hose was disappointing to manufacturers, the season having opened well and then relapsed. Vacuum cleaner hose met with good demand on account of its advantages. Rubber mats and stair covering have been in request. Inquiry for bottle discs was moderate. Rubber gloves are being constantly sold on a scale of increased importance, for their various uses.

The relative lack of new factory installations naturally affected business in driving belts. Trade has for some years been unsatisfactory in this branch, the competition of leather belting becoming constantly keener.

THE RUSSIAN RUBBER GOODS MARKET.

The Russian rubber goods trade is said to be in an exceptionally active condition, the factories being overwhelmed with orders from the various provinces and some of them being unable to accept the business offered. They would not have got so far behind with their orders, but for the scarcity of benzine, resulting from the strike at Baku, which has made it necessary to import the article.

The demand has materially increased for all rubber articles, particularly for rubber shoes and automobile tires, while the augmented needs of industry and shipbuilding exercise a favorable effect on the mill supply trade.

The automobile tire business owes its activity to the fact that each automobile uses every year approximately \$300 worth of tires, and the number of automobiles is increasing. The Russian industry cannot meet the requirements of the market and tires have to be imported.

Notwithstanding the active demand for rubber goods, prices have fallen, those of rubber shoes having dropped 20 to 25 per cent., and automobile tires 30 per cent. These reductions are due to the lower price of rubber, as well as to the reduction in cost of manufacture, through competition. Credits are in a satisfactory condition, business not being restricted from this cause, as is sometimes the case.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

AN ANTWERP VIEW OF PLANTATION AND PARA.

IN their annual report, Grisar & Co., of Antwerp, remark that the equality of plantation and fine Pará rubbers is no longer disputed when they are both well prepared, but at the same time the want of uniformity places the former in a position of inferiority to the latter.

Fine Pará is harvested by the only method known since time immemorial: the coagulation of the latex by the smoke of palm nuts found in the equatorial forests. This method, altho relatively primitive (as it leaves 15 to 20 per cent. of volatile substances in the rubber), has the advantage of the product being absolutely homogeneous and never varying in its quality.

The fact that the *Hevea* trees in the forest are so widely scattered makes it necessary for the rubber gatherer to locate his camp near a considerable cluster of old trees, in order to insure a sufficient supply of latex. Consequently the only trees placed under contribution are more than 20 years old.

In the East the situation is notably different, the rubber industry being relatively young, and various methods of coagulation being tried until the "rational process" is found. Meantime the coagulating agent principally employed is acetic acid, but the right proportion is not always observed and very often an excessive quantity injures the product. At the plantations, the trees being from 5 to 8 years of age, the factory receives and treats latex from trees of different ages. In some cases, chemicals have to be added to the fresh latex to delay coagulation, when the plantation is distant from the factory. As the consumer is now obliged to make long and expensive tests to know what he is buying, referring to the establishment of a testing station as has been suggested by the Rubber Growers' Association of London, Messrs. Grisar remark that, while it offers apparent benefits to consumers, it does not remove the initial cause of complaint—the mixture of several qualities in one shipment.

They suggest the installation in the chief plantation districts of special depots solely intended for the rapid coagulation of the latex by the processes now admitted to be the most effective, without any admixture of needless coagulants or anti-coagulants. In conclusion they say that the avoiding of organic fermentations and the form the rubber will assume in the central factory (whether Crêpe or Smoked Sheet) will in no degree affect its intrinsic value. The advantage of the system, it is added, will be the securing of a crude material as homogeneous as Pará,

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of October, 1913, and for the first ten months of five fiscal years, beginning January 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
October, 1913.....	\$265,798	\$136,840	\$643,285	\$1,045,923
January-September ..	1,891,785	982,953	6,546,215	9,420,953
Total, 1913.....	\$2,157,583	\$1,119,793	\$7,189,500	\$10,466,876
Total, 1912.....	2,125,333	1,148,716	6,623,334	9,897,383
Total, 1911.....	1,909,150	1,487,563	5,935,113	9,331,826
Total, 1910.....	1,759,590	1,906,961	4,687,399	8,353,950
Total, 1909.....	1,469,272	1,288,705	3,478,438	6,236,415

The above heading, "All Other Rubber," for the month of October, 1913, and for the first ten months of three fiscal years, beginning January 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
October, 1913.....	\$237,116	\$75,207	\$312,323
January-September	3,244,015	429,668	3,673,683
Total, 1913.....	\$3,481,131	\$504,875	\$3,986,006
Total, 1912.....	2,759,339	485,908	3,245,247
Total, 1911.....	2,080,517	480,915	2,561,432

Crude Rubber During 1913.

THE principal feature of the crude rubber market during recent years has been the gradually increased importance of plantation rubber as a factor in the situation. Brazilian exports have practically been stationary, while those from the East have advanced by leaps and bounds. These conditions are shown by table A.

TABLE A.

PRODUCTION OF PLANTATION AND PARA RUBBER.

Compiled by S. Figgis & Co., London.

1907. 1908. 1909. 1910. 1911. 1912. 1913.

Ceylon and India.							
tons	230	350	600	1,430	2,750	6,300	11,590
Malaya, tons	780	1,450	3,250	6,800	11,400	22,200	35,410
Total plantation,							
tons	1,010	1,800	3,850	8,230	14,150	28,500	47,000
Brazil, tons			42,000	40,500	39,500	40,500	39,000

The third important source of rubber, Africa, has shown a decrease, according to table B, which has been more than covered by the receipts of plantation rubber.

TABLE B.

WORLD'S SUPPLY OF RUBBER

	1912.	Estimated 1913.
Wild—	tons.	tons.
Brazil	40,500	39,000
West Africa	13,800	10,000
East Africa, Penang, Borneo, Ran- goon, Assam, Madagascar, etc....	4,000	3,000
Central America, Mexico, etc....	2,500	2,000
Guayule	7,000	2,000
Jelutong, etc.....	2,700	2,000
Total Wild	70,500	58,000
Plantation—		
Total Plantation	28,500	47,000
Grand total	99,000	105,000

Table B shows the world's comparative production of 1912 and 1913, according to latest estimates; the grand totals being: 1912, 99,000 tons, and 1913, 105,000 tons. The increased production of 6,000 tons arises as follows:

Increases.	Decreases.
Tons.	Tons.
Plantation	18,500
	Brazil
	West Africa
	East Africa, etc....
	Central America,
	etc.
	Guayule
	Jelutong, etc.....
	Total
	Net increase
	18,500

The increased production of plantation rubber is not an accidental or transitory occurrence, but part of the progress which has been taking place of recent years as shown in table A.

The increased output of the eastern plantations was thus 18,500 tons, of which 12,500 tons were offset by the reductions shown in other descriptions; the balance of 6,000 tons appearing in the increase of the world's product from 99,000 to 105,000 tons.

Perhaps the most notable feature of the year's rubber trade was the fall in prices and the establishment of a premium in favor of Brazilian rubber, through the slower rate at which it met the reduction established in plantation rubber. A comparison of the respective prices at typical periods shows the following results:

COMPARATIVE LONDON PRICES.

	Fine Hard Pará.	Plantation.
December 24, 1912.....	4s. 7¾d.	4s. 7¼d.
February 25, 1913	4s. 0 d.	4s. 0 d.
April 26, 1913.....	3s. 4½d.	3s. 2½d.
May 24, 1913.....	3s. 9 d.	3s. 3 d.
June 25, 1913.....	3s. 8¾d.	2s. 11 d.
July 26, 1913.....	3s. 7 d.	2s. 9½d.
August 23, 1913.....	3s. 9½d.	2s. 8 d.
September 25, 1913.....	3s. 7½d.	2s. 4 d.
October 27, 1913.....	3s. 1½d.	2s. 2 d.
November 22, 1913.....	3s. 2 d.	2s. 4¾d.
December 23, 1913.....	3s. 1¼d.	2s. 3¾d.

The lowest point touched for plantation rubber was 1s. 11d. on September 17. Thus starting the year 1913 about on a level with each other, the two standards closed the year with a difference of 10d. per pound, the premium for fine Pará having meanwhile touched 1s. 3½d. per pound.

While the relative merits of Pará and plantation rubber have been freely discussed, the absorption of the largely increased shipments of the latter is the best proof of its having been taken up by a large number of manufacturers, who have recognized its advantages. The opinion has been expressed that the fall in prices has been beneficial to the plantation rubber industry in two ways: by directing attention to plantation rubber, and by enforcing on the producers a policy of economy which, when fully carried out, should effect a saving of 25 per cent. to 50 per cent. in the cost of production.

AFRICAN RUBBERS.

Table B shows a reduction of 3,800 tons in the production of West Africa which is partly reflected in the receipts from the Belgian Congo at Antwerp. The total figures, as shown by Grisar & Co., illustrate the comparative movements of Congo and plantation rubbers at that port:

ANTWERP RECEIPTS.

	1912.	1913.
	tons.	tons.
Belgian Congo	3,230	2,886
Plantation	1,403	2,033
Various descriptions	145	121
Total	4,778	5,040

The reduction in shipments from the Belgian Congo has thus been more than offset by the increased receipts of plantation rubber.

This decrease in Antwerp arrivals is the direct consequence of the effects produced by the fall of prices in Europe, which represents about 58 per cent. for Congo rubber, 52 per cent. for plantation and 22 per cent. for fine Pará. The Belgian government has endeavored to meet the situation by a reduction in the export duties and by eliminating them on certain low grades.

In this way, coupled with the reduced rates of transport and the improvement of quality, it is hoped that the rubber industry of the Belgian Congo will be able to overcome the effects of the present crisis.

The plantations belonging to the Belgian government have been developed on a normal scale during 1913; now representing about 2,500 acres under *Hevea*, 3,400 acres under *Funtumia* and 1,000 acres under *Manihot*.

Amsterdam arrivals for 1913 were 1,039 tons, of which 989 tons was plantation rubber, as compared with total of 495 tons in 1912, including 425 tons plantation.

Rotterdam arrivals for 1913 were 2,101 tons as compared with 1,375 tons in 1912; the excess being divided between plantation and Austrian descriptions.

M. Jean Roederer, in his annual report from Havre, shows the following comparative imports of the leading qualities received at that port:

HAVRE RECEIPTS.

	1912. tons.	1913. tons.
French Congo.....	1,077	1,182
Various descriptions	890	252
Pará	3,695	3,493
	5,662	4,927

The fall in prices during the year in the principal qualities represented for Congo about 51 per cent., and for Pará about 30 per cent. Generally speaking, the situation of rubber is considered sound, stocks being normal and an improvement being in prospect for 1914.

TABLE C.
WORLD'S CONSUMPTION OF RUBBER.

	1912. tons.	Estimated. 1913. tons.
Europe.....		
England	14,500	17,500
Germany, Austria, etc.....	16,000	16,500
France	9,500	9,000
Russia	9,000	11,500
Italy, etc.	1,500	1,300
Japan and Australia	1,000	2,000
America and Canada.....	47,500	47,200
	99,000	105,000

As shown in table C, by Messrs. S. Figgis & Co., there has been an increased consumption of 6,000 tons in 1913 as compared with 1912, made up as follows:

	Increases tons.	Decreases tons.
England	3,000	...
Germany, Austria, etc.....	500	...
France .....	...	500
Russia	2,500	...
Italy, etc. ....	...	200
Japan and Australia	1,000	...
America and Canada.....	...	300
Total	7,000	1,000
Net increase .....	...	6,000
Total increase .....	...	7,000 tons.

Eliminating the smaller quantities, the increase is mainly in the English and Russian consumption, while the figure of 1913 for America and Canada is estimated at about the same as 1912.

Such are the principal facts as shown by the statistical returns for 1913 so far to hand.

ENGLISH RUBBER STATISTICS.

According to official statistics, the last three years have shown a marked increase of English crude rubber imports and re-exports. The totals are as follows:

	1911.	1912.	1913.
Imports (tons)	46,121	56,024	71,567
Re-exports (tons)	29,081	37,050	45,829

Consumption, (tons)	17,040	18,974	25,718
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The quantity for 1913 was derived from the following sources:

French West Africa.....	1,027
Peru	1,324
Brazil	16,527
Gold Coast	678
Straits Settlements	15,377
Federated Malay States.....	10,059
Ceylon	6,826
Other countries	19,749

Total	71,567
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Imports of 1913 exceeded those of 1912 by 15,000 tons. One-half of this surplus was re-exported and the other half went to increase consumption.

Applying the same calculations to the statistics of gutta percha (including balata) the following results are shown:

	1911	1912	1913
Imports, tons	3,300	2,872	5,561
Re-exports, tons	469	304	443

Consumption, tons	2,831	2,568	5,118
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The increased imports have been absorbed by English consumption, only a small proportion having been re-exported.

FEDERATED MALAY STATES RUBBER EXPORT.

According to information cabled by the Federated Malay States Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of December amounted to 5,859,840 pounds as compared with 4,618,880 pounds in November, and 3,693,929 pounds in the corresponding month of 1912.

Appended are the comparative statistics for 1911 and 1912:

	1911	1912	1913
January	1,329,170	2,730,576	4,772,880
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
April	1,235,917	2,285,390	3,642,240
May	1,147,488	2,255,034	2,744,000
June	1,229,754	2,305,915	4,491,200
July	1,581,993	2,695,861	3,989,440
August	1,651,845	3,655,535	5,293,120
September	1,677,062	2,968,121	4,480,000
October	2,182,857	3,215,231	4,838,400
November	2,104,317	3,121,473	4,618,880
December	2,147,859	3,693,929	5,859,840
Total	19,695,330	34,732,415	52,557,409

It will be seen that the total export amounted to 52,557,409 pounds (23,463 tons) as compared with 34,732,415 pounds (15,506 tons) in 1912 and 19,695,330 pounds (8,792 tons) in 1911. The rubber exports of the Federated Malay States display a continuous advance. The figure of December, 1913, is the highest monthly amount as yet recorded.

CHANGE IN FIRM OF M. A. RITTER & CO.

Messrs. M. A. Ritter & Co., of London, announce the change in style of their firm to Ritter, Ritter & Co. The partners are Mr. Otto Ritter, Sr., and Mr. O. H. Ritter, Jr., and the change was made by agreement with their former partner.

Some Vigorous Views From Singapore.

Editor, THE INDIA RUBBER WORLD, Dear Sir:—

IT is rumored here that the Shipping Conference here and at home have arranged for the freight on rubber to be reduced to 60s. per ton (50 cubic feet) on rubber consigned to the London market, and that the rate per ton from Singapore to New York be raised to 80s. per ton—a difference of 20s. per ton in favor of London; being an attempt on the part of the Shipping Conference *cum* Rubber Growers' Association *cum* rubber dealers to keep up the profitable market—to themselves—at present existing in London.

The humor of recent events is very striking to anyone who is acquainted with the composition of our London market. The noble efforts of the Rubber Growers' Association to cut their own throats politely by reducing their trading profits on the rubber they handle, in favor of better market conditions for the produce from the estates they direct, are truly ridiculous. For months they have been sitting in secret conclave trying to square the circle, and at last—lo! behold! the mountain was in labor and there was evolved a rat—in mouse's clothing!

They have not quite squared the circle, but they have evolved a sort of dodecahedron, which at a distance might appear as a sort of a circle to a casual observer. As you will have already seen, the thing is a *reductio ad absurdum*, and in reality plays directly into the hands of the Dreadful Dealers they had called upon themselves to suppress.

As they are own cousins to these same dealers, and are suspected of having a sneaking interest in the profits of same, to say nothing of fat commissions of percentage of the crop, etc., etc.—*vide* the Kamuning Co., meeting last November—it is a bit difficult to see how they are going to achieve the wonderful results that they have promised—on the wait and see principle. As most of the members of the Rubber Growers' Association are members of the Shipping Conference, their last little effort in creating a widely discriminate freight rate in favor of their own particular market doesn't look like the essence of sincerity to a casual observer.

Arising out of this situation, I put forward the proposition that the American buyers combine to charter steamers of their own to convey their rubber direct from Singapore to New York, at a cost of about 30s. per ton—a saving of 50s. a ton. As there are about 1,400 pounds net weight of average rubber per ton freight the saving would be about 3d. (6 cents gold) per 7 pounds. I need say no more to keen business men. If America would combine to take say 3,000 tons net of rubber per month from Singapore, equal to about 4,000 tons freight, then counting four months to a round trip, four steamers of 5,000 tons would be required—costing about £6,000 per month, on a three years' charter. This would amount to £2 per ton net weight of rubber or 30s. per freight ton if nothing else were carried, and the boats returned here empty. As, however, they would certainly bring cargo here, and take a certain amount back, it may safely be said that the actual cost of the rubber freight would amount to little more than 20s. per freight ton! I give you the project for what it is worth. America will certainly buy 3,000 tons per month from us next year.

The principal feature of the present movement in local planting circles appears to be a desire to conform to manufacturers' requirements—if only the manufacturers will say what it is that they require. This being an *impasse*, there seems only one way out of it. The London agents, dealers and directors having shown that they do not seriously mean to injure their own personal profits for the benefit of the shareholders—anything that they may do or profess being only a shadow without much solid substance, as far as we can make out—there is left only one alternative—for headquarters to meet headquarters. Let the

consumers in America, say, combine together to support a buying agency here. This agency will be able to obtain exactly what the consumers require, and by means of subsequent elimination of unearned profits now made, will be able to offer planters here higher limits than ordinary dealers can do. The effect of this will be to cause planters to produce certain standard types to the buying agency's requirements, knowing that by conforming to this they can obtain a ready, immediate cash sale at a higher price in the Singapore market than they can hope to do by any other method of the disposal of their product. A planter will thus engage to sell the whole of his output to the buying agency at current rates—he guaranteeing that his rubber shall be prepared up to certain fixed standards.

The manufacturers will soon get to know the qualities of these standards, and will know that for qualities A, B and C, etc., they will require to use known formulae, X, Y and Z.

Handling the rubber will then become a very simple proposition for manufacturers—as they know that their own buying agency here will only buy the right stuff—and it will reach them direct from the estate, so to speak; at least every parcel can be traced direct to the estate, so that any parcel which did not come up to the standard would at once bring trouble in heaps for the offending estate. At first the expense of repacking here must be borne, until it was found that the estates could be trusted. Many estates could, however, be so trusted right away. This would do away with the difficulty at present experienced in New York—complaints as to quality and condition, etc., which are often difficult to decide after nearly two months' freightage, and are the cause of much trouble and expense—due very largely to the present methods employed of buying “a pig in a poke.” Very few American manufacturers really know where their rubber comes from, and a great deal of it is faked.

This could not happen to them with their own buying agency, and with a receiving and forwarding agency in New York. The cost of a buying agency here, on salary, would amount to about \$4,000 to \$5,000 gold per month, for a staff up to say 30,000 tons per year, and the saving to buyers would be about 4 to 5 per cent. on present methods—to say nothing of maintaining a steady market.

Very truly yours,

SINGAPORE.

WHY SEND RUBBER TO LONDON?

In a recent editorial, the “Times of Ceylon,” in discussing the above subject, says:

“The advantages of selling rubber on the local market are becoming so obvious that directors will find their position an awkward one when called upon by shareholders to explain why they continue to throw away pence per pound in the sale of their product . . . when the rubber goes via London to, say, America. . . . It cannot be good for the industry to allow the product to be bled this way, when consumers display such readiness as they do to take the rubber direct from the country of production. . . . It is for the shareholders to see whether they are prepared to continue a system which practically amounts to a subsidization of London houses at the expense of their pockets.”

PUTTING IN MORE RUBBER.

In a recent speech to the Legislative Council of the Straits Settlements, the Governor said:

“The cultivation of rubber does not as yet appear to have suffered any serious setback. Where estates have had some other form of cultivation together with rubber, whether it is cocoanuts, gambier or tapioca, the tendency to remove the second crop shows few signs of diminution.”

The Editor's Book Table.

INDIA RUBBER PLANTING. BY R. H. LOCK, SC. D.
New York, 1913. G. P. Putnam's Sons. [Cloth, 8vo, 245 pages.]

IN his endeavor to make his book suitable for as wide a circle of readers as possible, Dr. Lock has combined the science of rubber planting with general information of use to the prospective planter. His experience as Assistant Di-



Hevea RUBBER ON SWAMPY LAND.

rector of the Botanic Gardens, Ceylon, has been of value to him in the preparation of this volume, which embraces a description of the planting, harvesting and manufacturing work involved in bringing rubber from the field to the consumer.

Starting with the botany of rubber, and the physiology of latex production, Dr. Lock deals with tapping and other points connected with harvesting operations. This leads up to a description of factory work on the estate, including the transport of latex, coagulation, washing, drying, crêping, smoking and smoke-curing. Dr. Lock remarks that plantation rubber comes on the market as biscuit, sheet, crêpe and block, any of these forms being either smoked or unsmoked, and the unsmoked varieties differing much in color. The thickness and other characteristics of the various types differ

thus militating against uniformity of product. On the other hand, similar grades of rubber, produced on different estates and from trees of different ages, appear to differ considerably in strength and resiliency. A chapter is devoted to the pests and diseases of *Hevea*, including insects, fungus and root diseases, as well as other troubles of this nature.

While *Hevea Brasiliensis* is recognized as the plantation tree *par excellence*, the merits of other varieties are likewise discussed in a special chapter, the final section of the work dealing with the manufacture and vulcanization of rubber goods.

Dr. Lock has assembled a large number of facts bearing on the cultivation, preparation and manufacture of rubber, in such condensed form as to be suitable for the general reader



Hevea RUBBER AND TEA.

as well as for the trained rubber expert. Twenty-two photographs serve to illustrate the text, a few of which are reproduced.

TRANSACTIONS OF THE AMERICAN INSTITUTE OF CHEMICAL Engineers: Vol. V, 1912. Illustrated. Published by the Institute and for sale by D. Van Nostrand Co., New York. [Cloth, 8vo, 284 pages, Price six dollars.]

As the combined result of expert investigations by almost a score of scientists noted in their respective branches, the "Transactions" of the above-named association contain a number of interesting papers. In dealing with the question of industrial efficiency, Mr. Wm. M. Booth remarks that the chemical engineer can only take his legitimate place when he can transpose the symbols of the chemist to the dollars, cents and percentages of the business world. The highest type of his endeavor is connected with the invention and perfecting of new processes, later on establishing useful industries, which may attract capitalists of ability, courage and means to embark in such new enterprises. Not less important is the introduction of economies in processes already established.

Statistics of the capital invested in the United States in manufacturing show an advance from \$533,245,000 in 1850, with 957,059 employees, to \$18,428,270,000 in 1910, with 6,615,046 hands. This gain is largely due to the improved processes introduced by the expert chemical engineer. At the same time, consulting engineers can often render essential service by disapproving the proposed purchase of equipments which a concern has never needed and should not buy.

In direct connection with this application of industrial efficiency, it is of interest to note, from the paper of Professor



WORKING, SHOWING PREPARATION OF HEVEA RUBBER

very considerably, and, it is added, reflect the indecision of manufacturers as to what is best suited to their requirements,

M. C. Whitaker, that Columbia College, New York, has established a three-year course of study leading up to the Post-Graduate Engineering Course. The former includes analytical geometry, chemistry, shop work, calculus, physics, statics and surveying.

Professor Whitaker's paper is supplemented by a number of illustrations, showing the principal features of the laboratory attached to the new department. This laboratory it is proposed to use both for instruction and investigation.

A subject of importance is dealt with in Dr. L. H. Baekeland's paper on the "Protection of Intellectual Property in Relation to Chemical Industry," in which the various aspects of the subject are fully considered. Another paper of a general character is that of Mr. W. M. Booth, on "Water for Industrial Purposes," in which it is pointed out that before deciding on the location of a new factory a thorough study should be made of water conditions, under the heads of manufacturing requirements, drinking water and water for fire-extinguishing purposes. It is recommended that two independent sources of supply should be available in each case.

"The Beehive Coke Oven Industry of the United States" is treated by Mr. A. W. Belden, of the Bureau of Mines, in a comprehensive paper in which the history of the coke industry since its establishment in 1817 is outlined, as well as its present conditions. Plans of coke furnaces supplement the text. "Acetylene Solvents" are discussed by Professor J. H. James, under the heads of laboratory methods and tests and laboratory results, accompanied by a series of diagrams.

Cement and allied subjects are handled in six papers: "The Temperature Gradients in Setting Portland Cement," by Allerton S. Cushman; "Potash from Natural Silicates," by Mr. Cushman, in conjunction with G. W. Coggeshall; "Setting Time of Portland Cement," by E. E. Ware; "Paving Block Impregnation," by John Hayes Campbell; "Blast Furnace Slag as Brick Material," by Professor Albert E. White; and "Potash, Silica and Alumina from Feldspar," by Professor Edward Hart.

Various other special subjects were dealt with in the following papers: "Oxygen in Petroleum and Asphalts," by Dr. S. P. Sadtler; "Decomposition of Linseed Oil during Drying," by Professor J. C. Olsen and A. E. Ratner; "Opacity of Pigments," by G. W. Thompson; "Effect of Lime Sulphur Spray on the Eyesight," by Professor James R. Withrow; and "Phenol-Formaldehyde Condensation Products," by Dr. L. H. Baekeland.

The chemistry of food products is represented by "A Chemical Investigation of Asiatic Rice," by A. S. Cushman and H. C. Fuller, and by "Disinfectants in Sugar Solutions," by George P. Meade.

The "Transactions" of this representative institute thus afford a view of recent technical progress in the various branches of industrial science. By grouping the papers a still clearer idea is gained of their application. Not only as a record of the work of the institute, but as a standard text book, the chemical engineer will appreciate the value of this summary, reflecting, at it does, the latest achievements in the world of technology.

GRINIER'S RUBBER ANNUAL 1913. KUALA LUMPUR. FEDERATED MALAY STATES. Charles Grenier & Son. [Paper, 64 pages, 12 x 9, 100 illustrations.]

In the editorial introduction to this welcome annual the anticipation is expressed that the time of tribulation through which the rubber trade is now passing will come to a happy ending. The industry, it is added, will come out of the present ordeal like refined gold. Reviewing the late developments of the rubber trade, it is remarked that, barring the question of prices, the rubber industry has not had much to disturb the even tenor of its way. Outputs have in most cases far exceeded anticipation. A satisfactory feature of

the outlook is the prospective abolition of the Federated Malay States export duty on rubber.

The literary matter in the Annual maintains its accustomed standard of high quality.



MANAGER'S RESIDENCE, RUBBER PLANTATION, MALAY STATES.

with by Mr. Edward Salmon, while Mr. Arthur Shepard discusses the "Wild Rubber Position" in connection with the elimination of inferior grades. "The Case for Standardization" is outlined by Mr. G. S. Montague, and an interesting comparison of plantation costs in Malaya, Ceylon, Sumatra and Java is furnished by Mr. J. F. Ashby. To those financially interested in rubber ventures, an article by Mr. W. A. Tinnock on the "Valuation of Rubber Shares," will specially appeal.

As usual, the largest portion of the "Annual" consists of



SIX YEAR OLD RUBBER, ALLIGER, F. S. M.

illustrated reviews of some 80 plantations, thereby bringing the reader into close touch with Malayan conditions.

The illustrations, two of which are here reproduced, have been artistically executed and form an attractive feature of the "Annual."

DR. DE TOLEDO SUPERSUCCEEDED

The Bureau of Foreign and Domestic Commerce, Washington, D. C., has informed THE INDIA RUBBER WORLD that Dr. Pedro de Toledo has been superseded as Brazilian Minister of Agriculture. It is understood that his successor is Dr. Edwiges de Queiroz. The late minister had, it will be recalled, been prominent in the development of the "Defesa da Borracha," or Bureau for the "Defense of Rubber." Reports state that the policy of this bureau has not been abandoned, but that its scope has been greatly decreased. It is further stated that Dr. Toledo has been appointed by the President as Brazilian Minister in Rome.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent

ACCORDING to reports in the trade, business has not opened up so briskly as might have been generally desired. There is a feeling all along the line that the conservatism which permeates nearly all lines of business is still to be observed in the rubber business. The one exception seems to be rubber clothing, the manufacturers of which are busy. Automobile tire makers are not specially busy, and in some factories hands have been laid off. In mechanical goods there is something doing, but manufacturers are not boasting about it. Druggists' goods are in fair demand, with some complaints of close prices and competition. Rubber footwear producers have had their troubles this season, as winter has been more than usually backward, tho at present writing the weather is such that large inroads will be made in retailers stocks, and this may later help the manufacturers.

* * *

Speaking of rubber footwear, the trade looked forward with some eagerness, not unmixed with anxiety, to the announcement of prices and terms of the United States Rubber Co. Many in the trade here would prefer to have such changes made March 1, nearer the end of the season, rather than in January, which is the middle (and this year almost the beginning) of the retail demand for rubbers. The announcement was made promptly January 1, and the changes in list prices were practically nil, a cent reduction on a few lines. But the terms were changed, the discount being increased from 15 and 5 per cent. to 25 and 5 per cent., no change being made in the jobber's discounts. The average reduction shown, therefore, was nearly 11 per cent. on the net prices of last year.

As per their previous policy, the other rubber companies sent out their new price lists, basing their net selling prices on those of the United States Rubber Co. The prices and terms of the Hood Rubber Co., the Apsley Rubber Co. and the Beacon Falls Rubber Shoe Co. figure out about a 5 per cent. differential from the United States company's prices, tho here and there a difference of a cent or two is shown in certain items in the catalogs.

* * *

Nearly three years ago, or to be explicit, on the night of February 2, 1911, the storehouse of the Converse Rubber Shoe Co. at Malden was set on fire, it is claimed, by sparks from a locomotive of the Boston and Maine railroad. About the middle of January the long delayed suit against the Boston & Maine Railroad Co. for \$90,000 damages was taken up by the court, and on one day an extraordinary proceeding was introduced—namely the transfer of the scene of the trial from the court house to the fire station. The reason for this was the summoning as witnesses of a large number of firemen. The chief engineer demurred, however, against the absence of so many firemen from duty. Therefore the auditor and the attorneys for both sides proceeded to the fire station, and the testimony was taken without in any way crippling the fire service. The result of the hearing had not been reported at the time this letter is written.

The Converse Rubber Shoe Co. is the defendant in an action brought by Eugene Fuller, of Fall River, who claims that he was granted a patent April 19, 1910, for a rubber shoe protector, and that he entered into a contract with the Converse company to allow it to manufacture the goods under the name of the Fuller Rubber Shoe Protector, for which the company was to pay him two and one-half cents a pair on men's shoes and two cents a pair on women's shoes in which the invention was used. His complaint is that the company did not use its best efforts to dispose of goods so made, and that it never made returns to him. He claims \$50,000 in his action against the company.

For a quarter of a century William F. Mayo & Co. have occupied the big warehouse at 197 to 203 Congress street, doing an immense rubber shoe jobbing business, their trade extending over the entire country. That building now bears "To Let" signs in the windows, and because of that, it has become known that this old-established firm will remove to the big nine-story building 286 to 290 Summer street, which it has leased for a long term of years. The new location is just beyond the bridge in the new warehouse and manufacturing district, and not far from the South Terminal Station. The building is of most approved construction and is excellently adapted for the business.

* * *

A few months ago your Boston correspondent wrote an article for THE INDIA RUBBER WORLD on the Tango craze and its influence on footwear, especially the use of rubber in the soles of dancing shoes. For a heading or title to the article a particularly appropriate term was evolved, i. e., "Non-Skid Shoes for Dancing." Whether a Haverhill shoe manufacturer reads THE INDIA RUBBER WORLD, or whether it is an instance of "great minds run in the same channels" your correspondent knoweth not, but the shoe manufacturer has adopted the term and is advertising "Goodrich 'Non-Skid' Footwear for all forms of dancing where sure footing is a prime requisite." It is stated further that "the stately minuet which they tell us is being revived can be danced easily and gracefully with Goodrich 'Non-Skid' Footwear. In the hesitation waltz the dancers hesitate at just the proper moment with 'Non-Skids,' and the fitting qualities are so excellent that in the horse trot the wearers can cavort as much as they please with a perfect sense of security and not the least danger of casting a shoe."

* * *

There are few men who have been in the rubber shoe business for over a decade who are not acquainted with Chester J. Pike, who for some years had charge of the United States Rubber Co.'s business in Boston when it had its headquarters at the corner of Bedford and Chauncy streets, where the Boylston Bank is now situated. Mr. Pike is now connected with the advertising agency of A. W. Ellis Co., and in this connection he has charge of the general advertising of the "Hubmark" rubbers, manufactured at the Boston Rubber Shoe Co.'s factories. That this advertising campaign has been so successful is due to Mr. Pike's thorough knowledge of the rubber footwear business. The novel and efficient local and general advertising, the window cards and circulars were originated by him.

* * *

A new company has been formed for the manufacture of rubber heels and soles at Hanover, Massachusetts, under the title of the Hanover Rubber Co. A new factory 50 x 100 feet is just completed. Robert E. Parent is superintendent of the factory, and George J. J. Clark is president.

BOSTON WOVEN HOSE & RUBBER CO.'S NEW MILL ROOM NEARING COMPLETION.

The new building designed for mill and calender operations and storage of raw materials, which represents the latest addition to the Boston Woven Hose & Rubber Co.'s plant at Cambridge, Massachusetts, is now nearly finished. The work of installation is progressing rapidly, nine new 60-inch mills with three 30-inch rotary refiners being already in operation; and the machines are being moved from the old buildings. One of the features of the mill and calender room is the mastic flooring, which is considered far superior to either cement or wood, eliminating the possibility of dust, chips or other foreign material getting into the compounds.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

SOME INTERIOR VIEWS OF THE FIRESTONE FACTORY.

THE Firestone Tire & Rubber Co., of Akron, Ohio, has recently sent an expert photographer through the different departments of its factory and he has taken some exceedingly interesting pictures. There are nine in the series. The first picture shows the room where the crude rubber is put into the vats of hot water and soaked and run between rollers innumerable times to free it from the various kinds of dirt which the *seringueiro* seems to take great pleasure in incorporating in



NO. 1. CALENDER ROOM, WHERE THE FABRIC IS FRICTIONED.

the biscuit which he ships to market. The second picture shows the drying room, with the long sheets of crêpe-like rubber, which has been well masticated by the calender rollers, hanging up to dry. The third picture shows the compounding room, where



NO. 2. BUILDING INNER TUBES.

the perfectly clean, dry rubber is mixed with various chemical ingredients to give it endurance and wearing qualities.

Then there follow six photographs showing the actual process of tire making. These six pictures are herewith reproduced.



NO. 3. WRAPPING INNER TUBES BEFORE VULCANIZING.

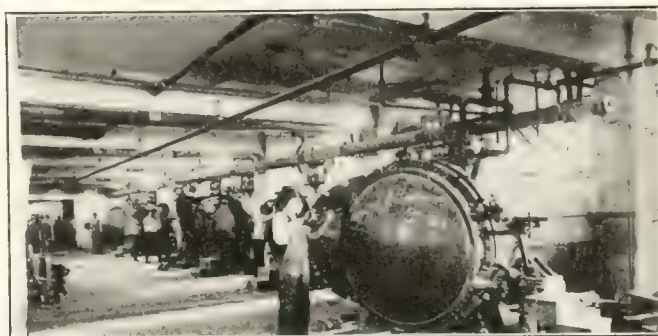
No. 1 shows the calender room, where the Sea Island cotton is run in between steel rollers with the compounded rubber until the fabric is entirely impregnated with the rubber. The next

picture shows the department where the inner tubes are constructed. This work requires skilled workmen, because defective work in the making of an inner tube is, of course, disastrous



NO. 4. HYDRAULIC HEATERS, WHERE TIRES RECEIVE FIRST CURE.

to its usefulness. The third picture shows another department, where the inner tubes are being wrapped before vulcanizing. Then comes a view of the department where the tires get their first cure, in hydraulic heaters. This is followed by a view of



NO. 5. VULCANIZERS, WHERE TIRES RECEIVE FINAL CURE.

the vulcanizing department, where the tires get their final cure, in gigantic vulcanizing ovens. The last of the views shows the inspection department, where the inner tubes, having been constructed and wrapped and vulcanized, are very minutely gone



NO. 6. FINAL INSPECTION OF INNER TUBES.

over by skilled inspectors so that none shall leave the shop which has any discoverable defect.

The annual stockholders' meeting of the Adamson Machine Co. was held on January 13 at the company's office at Akron, Ohio, when the regular dividend was declared and the board of directors of the past year re-elected, these in turn electing the following officers: Alex. Adamson, president and general manager; W. E. Slabaugh, vice-president; R. B. Koontz, secretary and treasurer.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE Workmen's Compensation Act, as made compulsory by the Legislature of Ohio in 1913, is followed strictly by all the rubber companies in Akron, for the mutual benefit of the employer and the employee—especially the latter. Part of the employees' wages, a certain fund assessed upon the employer and a certain amount given by the State—which comes chiefly out of the amount collected by the State insurance department—constitute the fund from which compensation is paid for injuries and death. The maximum amount that will be paid in case of death is about \$3,000. The weekly benefits are one-half to two-thirds of the employee's wages—in no case exceeding \$12 per week.

The commission that has the assessment in charge has made some very peculiar findings, holding most employees in reclaiming plants at practically twice what the regular rubber worker is charged, altho the amount of danger in the various cases may be almost identical. This no doubt will be remedied after the Commission has secured more information and can use the experience of similar departments in other States in making an actuary's table which is fair, complete and based wholly upon experience. The writer suggests that if this Commission would investigate thoroughly the results as found by the German government under their compensation act it might be of much help in ascertaining the rate of risk which should be collected from each employer. The writer also suggests that the law should be amended so that the employer would not be liable in certain cases under the compulsory law and also liable to a separate suit instituted by the injured, and in other cases leaving it to the injured workman's option whether he cares to take under the State compensation law or sue separately, thus compelling the manufacturer not only to carry insurance for employees with the State, but also to carry a separate insurance in outside companies.

The first annual stockholders' meeting of the Mohawk Rubber Co., incorporated in March, 1913, was held January 19 at its office in East Akron, with about 35 present. The company has made remarkable progress during its short career. It purchased the plant and all holdings of the Stein Rubber Co., and is now reported as having total assets of \$448,891; \$35,670 in real estate and buildings, \$67,228 in machinery and plant, \$48,100 stock on hand, \$20,198 bills receivable, \$46,302 accounts receivable and \$4,890 cash on hand.

Outside of the \$350,000 capital stock there are very few liabilities, and these consist of bills due for merchandise, machinery, borrowed money, etc., amounting to \$45,990. The surplus and undivided profits amount to \$52,899. This financial report is for November 1 last. The company's sales to November 1 amounted to \$184,877.

The time of the annual meeting was changed to February. The following directors were elected: R. M. Pillmore, C. D. Paxson (who is general sales manager of the Crescent Motor Car Co. of Cincinnati), M. E. Mason (former Morgan & Wright and United States Tire Co. district manager), C. W. McLaughlin (former assistant cashier of the Diamond Rubber Co.), J. K. Williams, F. J. Mishler, S. S. Miller (general manager of the company and former head of the Buckeye Rubber Co.) and Homer L. Rose (cashier of the Commercial & Savings Bank of Canton).

Mr. Pillmore was re-elected president, M. E. Mason, secretary, and C. W. McLaughlin, treasurer. The company will add a story to two wings of the plant and increase its working force this year.

A test race to determine whether the speed possibilities of the flying machine have equaled or surpassed those of the automobile was held January 21 at Los Angeles, California, between

Barney Oldfield, who holds a mile record of :36 2-5, and Lincoln Beachey, who skimmed through the air over that distance in :36 flat. This race resulted in victory for Oldfield. This is not the first race of the kind ever held, but is the first between two such speed masters, and is a severe test of air and land crafts.

* * *

Alexander Chatelain, one of the pioneer mold and die sinkers of the Akron rubber industry, has organized The Chatelain Mfg. Co., located at the corner of South High and South streets, Akron, for the manufacture of all lines of rubber molds and dies. G. H. Stanton is vice-president and assistant manager, and W. H. Morgan is secretary and treasurer.

* * *

The State of Ohio has passed legislation by which in a few years the highways will be paved connecting the 88 county seats of the State. This will cost millions of dollars and will be a great boon for the various rubber factories of the State. It will add approximately 4,000 to 5,000 miles of improved paved roads. This improvement comes under the control and direction of the State Highway Commission.

* * *

With the exception of one or two rubber plants, the Akron factories during the last two months have not been running full force, but to protect and retain their help they have retained most of their employees and have either cut down the number of hours per day or the number of days per week for each. The various companies expect to be running full time in the near future.

* * *

Mr. C. B. Myers has resigned as general manager of The Swinehart Tire & Rubber Co. His successor will be chosen soon.

* * *

The plans of The Buckeye Rubber Co. for three new buildings are almost completed and work will be begun as soon as the weather permits.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

FOR the past month Chicago's interest has been centered in the automobile trade. The annual Automobile Show, held January 24-31, at the Coliseum and the First Regiment Armory, excelled all its predecessors. The large attendance, was, without doubt, due to the boom in the automobile industry during the last year. Eighty-one gasoline cars, nine electric automobiles and one hundred and sixty accessories were exhibited, in addition to a number of cyclecars. Among the exhibitions this year were many striking and novel ideas in construction. According to experts, a great advance has been made in body and motor improvement, all tending toward comfort and protection.

In addition to Chicago automobile owners, show visitors included several thousand out-of-town dealers in motor cars and accessories. Altho some of the large tire manufacturers were finely represented, others were conspicuous for their absence. This withdrawal is a new experiment, and if it in no way affects the trade, will continue.

In looking over the assets and liabilities of different branches of the Chicago rubber industry for the year 1913, our attention is drawn to the immense increase in the rubber mail order business. Dealers have always regarded the mail order concern as an outcast, but it has now become a competitor which cannot be overlooked. Chicago is the best representative of this business, for it is the home of the two largest mail order houses in the world, viz.: Sears, Roebuck & Co. and Montgomery Ward & Co.

Five years ago the rubber business of the larger of the two,

Sears, Roebuck & Co., was almost negligible; one man might have handled it all. Today almost every conceivable article made of rubber is handled; in fact, many departments and managers are required for this branch of the business, which alone in 1913 amounted to \$2,000,000. Mr. Kettleworth, manager of the men's rubber coat department, states that when the company started in business this department was practically non-existent, but that the trade in these garments has doubled every five years, and that in 1913 it was very large.

The tire department does the greatest volume of business. In 1911 the sales were not worth mentioning, but in 1912 they amounted to \$350,000, and in 1913, \$950,000. This includes bicycle, auto and carriage tires. Strange to say, the best of the mail order tire business is done in the big cities, New York being the largest customer.

The bicycle demand is confined largely to country trade. Tho this vehicle is seldom seen in a large city, it still is and probably always will be the joy and necessity of the country lad. In 1913 one brand of bicycle tire reached a sale of 40,000, selling at the rate of \$4 per pair.

"This upward stride is but a beginning," states the manager, Mr. Choates.

The mail order houses claim that their popularity is due to the fact that by eliminating middlemen they have succeeded in selling direct to the consumer at a reduced rate.

* * *

There has been much interest shown of late in the proposed Lincoln Highway. In fact, patriotically inclined citizens all over the country are supporting it by volunteering to assume the expenses of sections of that highway, to be dedicated as memorials. Chicago patriots have been quite interested in the novel plan of a citizen of Los Angeles, who desires, in the memory of his mother, to install at intervals along the route across Illinois drinking fountains for pedestrians and motorists. Wealthy men of Chicago, especially those in the automobile and tire business, should be among the first to support this prodigious and beneficial undertaking in honor of their "rail-splitter." One Chicago man has calculated that if 3,000 of the millionaires of this county would each contribute one mile of permanently improved road surface of the Lincoln Highway, at an estimated cost of \$5,000 per mile, the road in its entirety would be accomplished.

The rubber footwear trade, which has been dull during the entire winter, was considerably cheered by the snow storm of January 18—the first of the season—and is encouraged to hope for better sales records during the remainder of the season.

* * *

The mechanical rubber goods people are enjoying a business in hose unusual at this season and due to the fact that the numerous quarries in this section have been able, owing to the mildness of the season, to work much later than usual.

* * *

W. H. Salisbury & Co., of 107 South Wabash avenue—one of the leading and oldest rubber stores in the city—have been making some very striking window displays. A recent display featured imported red rubber dolls, while including also a variety of drug sundries, raincoats, etc. A photograph of the company's store in the 70's occupied a prominent place in the window, marking the contrast between the store of that time and the thoroughly modern establishment of the present day.

* * *

The fact that Chicago policemen will not wear rubber shoes has been clearly and conclusively demonstrated. A certain firm here has followed sales to the local police with letters asking whether or not the shoes were satisfactory; and the majority of the replies having expressed dissatisfaction, stating that the shoes were too heavy, increased the natural perspiration of the

feet, etc., etc., the concern in question has discontinued the manufacture of this shoe, believing that this class of men, if any, should be able to appreciate any merits it might possess.

* * *

The tire advertisement of the B. F. Goodrich Co. at the end of the down-town section of Michigan avenue is one of the best in the city. It consists of an illuminated and intermittent electric sign which shows what seems to be a fiery tire rolling through space every few seconds. It is impossible for any person, however absorbed, to pass down the boulevard without seeing this advertisement, which is, of course, designated by the firm's name in monster letters of fire.

* * *

Mr. D. Russell, of 234 South La Salle street, is to be the sole representative of the Plymouth Rubber Co., of Canton, Massachusetts, in and about Chicago, beginning February 1. Mr. Russell will carry a full line of samples and will be glad to meet all the old customers of the company, as well as any new ones.

THE RUBBER TRADE IN RHODE ISLAND.

By A. Kettleworth, Correspondent.

THE several rubber plants in this vicinity which have been closed down, in accordance with the usual custom at this period of the year, for overhauling of machinery, etc., and taking of inventories, have again started up, some of them with reduced help. The outlook is said to be good, and it is expected that when trade opens in the spring it will be with a rush and that overtime will become the rule in all the factories. The business for 1913 was, upon the whole, better than the average, and but one concern in this state experienced any material trouble; and this was not due to lack of orders or profitable business but to the financial difficulties that the company found itself in following the suspension and closing of the Atlantic National Bank of this city.

* * *

According to the report recently filed with the United States District Court at Boston, certain claims of the Consumers' Rubber Co., of Bristol, have been disallowed by receivers of the Walpole Tire & Rubber Co., who state that these are for preferential payments to the Walpole Tire & Rubber Co. and for damages claimed from various sources, and that the amount and validity are contested and liability disputed. The receivers recommended that the claim of the Atlantic National Bank of this city for \$115,427 be referred to a master, saying "Claim on notes, liability disputed as to certain notes, value of collateral held not credited."

* * *

A second dividend of 20 per cent. was declared in the case of the Consumers' Rubber Co. at the office of the Referee in Bankruptcy a few days ago, payable on and after January 26. This makes 40 per cent. that has already been declared on claims against the concern. The plant has been running during the past three months under the direction of Robert S. Emerson, the receiver. It is understood that a new company is now forming that will take over this business and carry on manufacturing at the plant on a large scale.

* * *

Numerous and important changes and improvements have been under way at the plant of the Revere Rubber Co. in this city for several months, a number of which are now completed. The new refrigerating outfit is ready to be put into operation as soon as the weather makes it desirable to do so. Among the other buildings which have recently been added to the plant is a large storehouse, five stories in height, believed to be absolutely fireproof. A new boiler house has been erected and several of the older buildings have had one or two stories added. At the present

time the machinery is being re-arranged, so that there will be less handling of the rubber between processes. It is the intention of the management to have everything in running order by the time hot weather arrives, and then the new refrigerating plant will be put into full operation. Pipes have been connected throughout the factory, especially where it is desired to keep the more sensitive kinds of rubber goods at an even temperature, and through these cold brine will be forced.

The factory of the National India Rubber Co. at Bristol was closed down the first week in the month, when the machinery in the various departments was overhauled and necessary repairs made. Equipment has been installed in the new building recently completed. This is about 216 feet in length by 160 wide, built of brick, with cement floors, and will be used in connection with the wire manufacturing business. Stranding machines and lead presses are being installed. The building formerly used as the electric light station has been remodeled and will be used as a "slicing room." The printing department, formerly located in the basement of the packing room, is being removed to larger quarters in the old druggists' department.

The business prospects at the plant, especially in the manufacture of rubber footwear, are very encouraging, and Vice-President LeBaron C. Colt is authority for the statement that enough orders have been received to keep the plant extremely busy until well into the spring.

Achilles R. Maturi, for many years foreman in the shoe department, has resigned to accept a similar position at New Haven.

William McCaw, one of the oldest employes in length of service at the office of the National company, has resigned the post of assistant treasurer to take a position elsewhere. He had been with the National for fifteen years, going there first as assistant paymaster, later becoming paymaster, and being still more recently appointed to the position of assistant treasurer.

The final step in the complete reorganization of the Killingly Manufacturing Co., of Killingly, Connecticut, which was formerly controlled by Providence interests but is now under control of the Goodyear Tire & Rubber Co., of Akron, was taken in this city on January 16, when an issue of first mortgage 5 per cent. bonds of the company amounting to \$125,000 was cancelled by the Rhode Island Hospital Trust Co., and the mortgage annulled.

The Killingly company manufactures tire fabrics. Most tire fabric mills buy the yarn and weave the fabric, but the Killingly company buys the longest staple Sea Island cotton and itself manufactures the yarn which goes into its fabric. Benjamin F. Smith, of Pawtucket, is president of the company, W. Irving Bullard is resident manager and assistant treasurer and A. M. Banister of this city is one of the directors. Mr. Banister is Rhode Island manager for the Goodyear Tire & Rubber Co. and all are officers of the latter concern.

On January 23 notices were posted in the Alice mill, at Woonsocket, and the Millville mill at Millville, of the Woonsocket Rubber Co., informing the employes that owing to the mild and open winter both mills will, for a short period, be operated on the three-quarter time schedule, alternating four days and five days a week. Superintendent George Schlosser stated that orders from week to week would determine whether the employes will be given four or five days' work a week until the stock in the storehouse is reduced. Seasonable weather, with plenty of snow or rain would have the effect of keeping the mills running full time. At present there are about 1,400 people employed in the Alice mill and about 600 at Millville, all engaged in the manufacture of rubber boots and shoes.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent

THE American Ever Ready Co. of this city has made arrangements to act as Pacific Coast distributors for the product of the Thermoid Rubber Co., of Trenton, New Jersey, and to carry in stock at this point a sufficient quantity to enable them at all times to promptly supply the demands of the trade. Mr. R. F. Oakes, of the Ever Ready company, who has been east on business connected with this representation, considers this one of the most important deals in the automobile accessory line that will be made for the 1914 season and is very enthusiastic regarding the merits of the Thermoid brake lining as well as the prospects for its sale in this vicinity.

The Halliwell Co., which distributes in this part of the country the product of the Knight Tire & Rubber Co., of Canton, Ohio, has met with much success in the sale of the Knight tire, D. W. McElligott, the manager, stating that he has had a hard time securing tires fast enough to meet the demand, but that an effort will be made to secure larger shipments from the factory very early in the season. A recent trial of a Knight tire in southern California resulted in a record of 16,000 miles.

A fire which resulted in injury to a number of firemen and in property damage estimated at more than \$100,000, occurred late on the afternoon of January 9 in the four-story brick building at Seventh and Townsend streets occupied as a warehouse for scrap rubber, rags and paper, by Charles Harley & Co. The fire originated in the sub-basement, and while its cause is unknown it is supposed to have been due to spontaneous combustion. Because of the high rates in that section of the city the Harley company carried but little insurance. About a year ago fire destroyed the same wing of this building, entailing a loss of \$60,000. Another warehouse of this company, located at Sixth and Daggett streets, was also destroyed by fire on the morning of January 9, with a total loss of both building and contents and with little or no insurance on the stored goods.

The Federal Rubber Manufacturing Co., of Milwaukee, has announced the closing of a contract for a new Pacific coast branch building on the southwest corner of Van Ness avenue and Sutter street, this city, the building to be completed by February 1. This branch will be the distributing point for Federal tires for the Pacific Coast and Hawaii.

The western representation for the Portage Rubber Co., of Akron, Ohio, has been secured by C. C. Eichelberger, a veteran of the tire industry on the coast, whose sales department will be established in Golden Gate avenue at Hyde street. Mr. Eichelberger is one of the best known members of the local tire fraternity.

Los Angeles is said to be the center of the largest motoring community on the Pacific Coast, and it is probable that more makes of tires are handled there than in any other far-west city, with a demand ever on the increase. Among the latest makes to secure representation in that city is the Tyrian, manufactured by the Tyer Rubber Co., of Andover, Massachusetts, which is to be distributed through southern California by the B. F. Wade Tire & Rubber Co., of 512 West Eighth street.

Work is being pushed on the automobile tire factory under erection for the Panama Rubber Co., at Compton, and it is probable that this building will soon be completed and equipment installed. This industry was started in December, 1912, and the stores of the W. D. Newerf Rubber Co. were purchased in June of the following year. Funds for payment of the dividend of 7

per cent., which was recently declared by the Panama company, are stated to have been derived from the earnings of these stores.

* * *

The Los Angeles branch of the United States Tire Co. is adding both to the variety of the merchandise it offers and to the number of its employees. In addition to tires, a full line of rubber goods, including coats, boots, and everything that is made of rubber, will hereafter be carried in stock at this branch, and a larger force is required to handle the increased trade.

* * *

While excavations were being made in the high school grounds at Auburn, recently, what appears to be a vein of very fine asbestos was uncovered. Tho the vein is small, being only about 4 inches wide, the fibre is said to be of high grade.

* * *

The Hendrie Rubber Co., of Torrance, is reported to be meeting with much success. It has recently established branches in several cities, with a main distributing station at San Francisco. The capacity of the plant is now in the neighborhood of 100 tires a day and it is the expectation of the company to market its entire output in California. It is strictly a home product, even the cotton used in the fabric being grown in the Imperial Valley and woven by California cotton mills.

* * *

The branch store of the Kelly-Springfield Tire Co., at 515 East Pike street, Seattle, Washington, is one of the largest and most up-to-date of its kind in the northwest, the workroom containing 2,000 square feet of floor space, which is sufficient to accommodate five trucks, and is necessitated by the growth of the truck tire department at this branch and for the special application of the company's block truck tires.

* * *

During the past month there has been rain in plenty and already the total for the season has far exceeded the entire rainfall of last winter. It would seem that business should have picked up wonderfully under these conditions, and so it has for the retailers, because storm clothing has been in great demand and they have been able to work off accumulated and surplus stocks. The jobbers have not benefited to a corresponding extent, but of course it is a matter of satisfaction for them to know that this clearing out of old stocks should have a desirable effect on next season's trade.

* * *

The California branch of the Pennsylvania Rubber Co., of which J. E. French is manager, has moved its wholesale quarters and general store and salesrooms to a new location on Second street, between Mission and Howard, where larger quarters and better light afford a great improvement over the former cramped quarters on Mission street, near First. A retail department for attention to the needs of the automobile trade has been opened at Van Ness avenue.

* * *

The rubber heel which the American Rubber Manufacturing Co. is now turning out for Wm. Perkins, a well-known rubber man of this city, is meeting with excellent success. Claims that this heel is an infringement of prior patents have not been supported, and the fact that Mr. Perkins has received some very good offers for his rights indicates the genuine merit of the article.

* * *

The Sacramento Rubber Co., Sacramento, California, has taken the agency in that territory for the Federal Rubber Manufacturing Co., of Milwaukee, and has added a special service department.

* * *

The new wide-tire law enacted in the state of Washington, and which went into effect January 1, provides that for tires 2 inches wide or less the maximum load shall not exceed 400 pounds an

inch of tire width. This would make the maximum on a wagon with 2-inch tires 3,200 pounds, or with 1-inch tires 1,600 pounds. For tires wider than 2 inches and up to 5 inches the maximum load is not to exceed 400 pounds an inch of width of tire plus 50 pounds an inch in excess of 2 inches of width of tire. With a 5-inch tire the ratio of weight per inch of tire width is increased to 500 pounds an inch plus 70 pounds an inch for tires in excess of 5 inches wide. The maximum load includes the weight of the vehicle, and the law also provides that the load must be evenly distributed on each axle. The enforcement of this law is expected to materially aid in reducing the cost of upkeep of roads, statistics from European countries—which have taken the lead in wide-tire legislation—being unqualifiedly in favor of the wide tire from every standpoint.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

ALL the industries of this city are in a prosperous condition, with mills and factories running full force and in not a few instances day and night. Trenton's importance as a manufacturing center and its prospects for rapid and immediate growth and development are shown in reports recently made to the State Department of Labor. The year 1913, which was one of great prosperity, showed a production much in excess of the 1912 output. The rubber mills especially are doing a big business, those in the automobile accessory lines being particularly active.

* * *

The Essex Rubber Co. plant is being operated 24 hours a day, with a force of 400 operatives. This company is now installing new and heavier machinery in various departments and is adding a new press room 60 x 200 feet in size, engine and boiler rooms, and a new warehouse. These improvements and additions are expected to make room for an increased working force.

* * *

The John E. Thropp's Sons Co., which manufactures tire molds, wrapping, unwrapping and tire-making machines, vulcanizers, jar ring lathes, etc., is another of the local concerns for whose products the demand is in excess of productive capacity.

* * *

The Ajax-Grieb Rubber Co., well known tire manufacturers, sent out on January 1 from its New York office, at 1796 Broadway, an interesting circular in which much optimism is expressed. This circular goes on to describe confidence—of which optimism is the soul—as "the product of knowledge"; and the fact that the company is willing to back its confidence in the product of its large factory at Trenton, to the extent of a definite written guarantee of 5,000 miles on the Ajax non-skid tire, indicates a knowledge of its exceptional value and a very good reason for the present operation of that factory twenty-four hours of every week day.

* * *

The fire that recently occurred in the shipping department of the Empire Rubber & Tire Co. did not seriously interfere with this company's business, and orders are being filled and shipments made with the usual promptness. The origin of the fire is unknown, and the damage amounted to about \$1,500.

* * *

A meeting of creditors of the Russell Manufacturing Co., of New Brunswick, New Jersey, was held in that city a short time ago and a final dividend of 30 per cent. declared. A dividend of 50 per cent. having previously been paid, the creditors have realized 80 per cent. of their claims against this concern.

* * *

Charles Wilcox, for the past 28 years a resident of Morrisville, New Jersey, and employed by the Joseph Stokes Rubber Co., of Trenton, died on January 9, following a stroke of paralysis a few days earlier. He was 55 years of age and is survived by his wife, three daughters and three sons.

FOREIGN TRADE OPPORTUNITIES.

A REPORT from an American consul states that a business firm in his district desires to enter into correspondence with manufacturers of rubber overshoes with a view to securing an agency. As overshoes coming from Boston have a certain trade, it is preferred that manufacturers from that city or vicinity who use this word in letterheads or goods answer. Correspondence must be in Spanish, prices in gold pesetas c. i. f. some Spanish port should be quoted, and weights and measures of goods ready for export should be metric. Report No. 12,277.

A European business firm informs an American consular officer that it wishes to secure the agency of American manufacturers of a single-tube bicycle tire. The firm is prepared to give references. Report No. 12,290.

An American wholesale dealer in technical wares in a European city wishes to be placed in communication with American firms manufacturing cotton for electrical insulating purposes. The cotton must be spun on warp cops and must unwind easily. The dealer intends making considerable purchases, and desires offers at once. The consular officer who forwarded this information states that good references can be furnished. Report No. 12,301.

An inquiry has been received by an American consul in Germany from a local business man who is desirous of securing the names of American manufacturers of all kinds of rubber goods. He would like eventually to represent such firms in Germany, and states that he will be glad to furnish satisfactory references. Correspondence is solicited, and may be in either English or German. Report No. 12,302.

A business man in Australia has requested an American consul to supply him with the names of the leading American manufacturers of tennis racquets (frames only), gut for stringing the same, and tennis balls used in the international tennis matches. Report No. 12,354.

A report from an American consular officer contains a copy of a letter from a business firm in his district asking to be put in touch with American manufacturers of vulcan fiber. The company states that it purchases large quantities of this material, but most of the purchases at present are made through European middlemen, and the firm is anxious to make direct connections for its supplies. It is stated that over 220,000 pounds of this material are imported annually. Copy of the complete report giving further details will be sent to interested firms, as well as a sample which was furnished by the concern in question. Report No. 12,394.

An American consular officer in Canada reports that a resident of his district intends in a short time to establish a factory for the manufacture of rubber gaiters, and he desires to get in touch with American dealers in materials suitable for this purpose. Report No. 12,400.

A report from an American consular office states that a dealer in electric appliances in England desires to be brought into touch with American manufacturers of India rubber hose, armored with spiral steel wire, covered in turn with a cotton webbing, the hose to be such as is used in connection with vacuum cleaners. Report No. 12,417.

Sealed proposals for furnishing and delivering about 69,400 pounds of manila rope and 1,000 feet of rubber hose will be received at the United States Engineer Office, Custom House, Memphis, Tenn., until February 16. Information on application to E. M. Markham, Major, Engineers. Report No. 1,628.

In the United States alone there are manufactured annually about 10,000,000 automobile tires and about 2,000,000 motorcycle and bicycle tires. According to these figures, each automobile in this country—there are nearly 1,200,000 cars—uses two sets of tires each year.

THE INDIA RUBBER WORLD TROPHY AT THE LONDON RUBBER SHOW.

THE management of the Fourth International Rubber and Allied Industries Exhibition—to be held in London from June 24 to July 9 next—has distributed a 24-page pamphlet descriptive of the competitions to be held in connection with that exhibition and the various prizes and trophies to be awarded to the successful competitors. It devotes an entire page to the \$1,000 silver cup offered by THE INDIA RUBBER WORLD for "The Best Process for Extracting Latex from wild *Hevea*, *Castilloa* or *Manihot*." The description of the cup and the conditions under which it will be awarded, as they appear in this pamphlet, are as follows:

"This Trophy of silver is a Cup fifty inches in height, and is of most artistic design and workmanship. The stem of the Cup represents a trunk of the Rubber Tree, beside which is depicted a man with a rubber-tapping knife in one hand and a calabash in the other, tapping the tree in the destructive manner common to wild-rubber gatherers. The upper part of the tree trunk terminates in a cluster of rubber leaves, which hold a vase, graceful in form, the center panel bearing the inscription:

"THE INDIA RUBBER WORLD Trophy, for the Best System of Extracting Latex from the *Hevea*, *Castilloa* or *Manihot*. International Rubber Exhibition, London, 1914."



THE INDIA RUBBER WORLD CUP.

"This Cup is offered for the best process for extracting the latex from either the *Hevea*, *Castilloa* or *Manihot* wild rubber trees. (Note: NOT PLANTATION OR CULTIVATED trees.) The word 'best' is not meant to imply a process that is the best for only one of the three, but one that is relatively of the greatest value to the rubber-producing industry in countries where the above-named trees grow in their wild, not cultivated, state.

"Entries for this Competition may be in the form of an essay, with or without diagrams or illustrations, or they may be accompanied by tools and appliances for the purpose of further demonstrating the advantages of the suggestions made. All Essays must be legibly written or typed on one side of the paper (foolscap size preferred).

"Entries must be addressed to the Awards Committee, Exhibition Offices, 75, Chancery Lane (Holborn), London, W. C., whom they must reach not later than the 1st May, 1914. Competitors have the privilege, if they wish, of explaining or demonstrating their process before the Judges.

"The winning and the second and third best Essays will be read at the International Rubber Conference, and they will be duly published in THE INDIA RUBBER WORLD, New York, and in the official records of the Exhibition. The Exhibition Committee will present engraved Certificates to the first, second and third successful competitors.

"It is to be understood that entries are only accepted on the understanding that the Judges' decision will be final and without appeal. The Cup will be the absolute property of the winner. There will be no entrance fee. Entries close 1st May, 1914."

THE RUBBER CLUB GATHERING STATISTICS.

ANYONE who has been interested in the statistics of the rubber industry of the United States and has sought to get accurate information as to the output and value of different rubber articles has learned how difficult it is to get this information in exact and detailed classified form. The Rubber Club of America, following its policy of being useful commercially as well as agreeable socially, has started on the quest of correct rubber statistics, and with this in view has recently sent out the two circulars reproduced below; one asking the manufacturer for information as to the number of people connected with his business, and its volume and value, and the other supplying him with a form to be used in furnishing this information.

CIRCULAR SENT TO RUBBER MANUFACTURERS.

RUBBER CLUB OF AMERICA,
354 FOURTH AVENUE,
NEW YORK.

January 23, 1914.

To the Rubber Manufacturers of the United States:

The manufacture of india-rubber goods in recent years has reached such large proportions as to be classed among the most prominent industries of the United States, but up to the present time no reliable statistics have been compiled from which authentic information can be obtained showing its relative importance. The figures published by the Census Bureau at long intervals are frequently incomplete. The Rubber Club of America, which is a national organization comprizing in its membership representatives of all branches of the industry, proposes to make the effort to secure these statistics (taking for this purpose the business of the year 1912); and this plan has received the approval of the executive committee of the club.

With this end in view, we enclose herewith a blank, which we would be pleased to have you fill out at your convenience and return. Please note that this blank bears a number, so that YOUR NAME WILL NOT APPEAR ON YOUR REPORT. This is done for the purpose of making the information furnished absolutely confidential, as it will pass only into the hands of the secretary of the club, who is not connected with the rubber industry in any other capacity. The numbers are to be identified by names on a separate index, and after the information has been collected and tabulated the original reports will be destroyed.

It is hoped that this method will obviate any possible hesitancy on the part of manufacturers in furnishing the desired information.

Upon request we will be pleased to furnish you with a copy of these statistics when compiled.

We trust you will co-operate with the club in this important undertaking.

Yours very truly,

RUBBER CLUB OF AMERICA

H. S. VORHIS, Secretary.

FORM ON WHICH INFORMATION IS TO BE RETURNED.

No.....

Information Requested for Statistical Report of the Rubber Industry of the United States.

To Be Compiled by the
RUBBER CLUB OF AMERICA,
354 FOURTH AVENUE,
NEW YORK.

For the Year Ending December 31, 1912.

It Is Guaranteed That All Information Given Will Be Held Strictly Confidential.

GENERAL.

Number of employes engaged in manufacture for year ending December 31, 1912.....
Number of employes in office, administration, selling, etc., for year ending December 31, 1912.....

PRODUCT

Give answers in value of product manufactured in each of the following general divisions at factory sales prices:

Mechanical Goods	\$.....
Tires	\$.....
Boots and Shoes.....	\$.....
Insulated Wire and Insulating Compounds.....	\$.....
Druggists' and Stationers' Sundries.....	\$.....
Waterproof Fabrics (Carriage Cloth, Hospital Sheetings, etc.).....	\$.....
Clothing (Single and Double Texture).....	\$.....
Hard Rubber Goods.....	\$.....
Reclaimed Rubber	\$.....
Miscellaneous (not included in any of the above schedules)	\$.....

Total Production

Please fill out this blank and return without signature to

H. S. VORHIS, Secretary, RUBBER CLUB OF AMERICA,
354 FOURTH AVENUE, NEW YORK.

DEPARTMENT OF COMMERCE PLANS FOR DEVELOPMENT OF FOREIGN TRADE.

The Bureau of Foreign and Domestic Commerce of the Department of Commerce, Washington, has opened an office in the Custom House, New York, where publications of the bureau will be on file and an experienced member of the staff will be in charge to give information concerning the work of the bureau and to assist merchants and manufacturers in the development of foreign trade. Consuls in this country on leave of absence will visit this new office as convenience permits, meeting representatives of houses desiring to cultivate business in their particular foreign fields, and advance notices of these visits will be given through the daily Consular and Trade Reports, through notices to business houses which may have filed their names with the bureau as interested in special foreign fields, and through advices sent to local trade organizations. Another feature of the work of the bureau is that its commercial agents on their return to the United States will attend trade conferences or conventions of persons or organizations interested in special lines, for the purpose of personally informing merchants and manufacturers of the result of their studies on such lines in the foreign field.

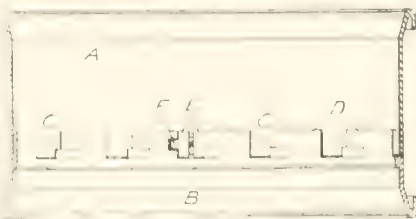
THE FEDERAL WATERPROOFING CO.

The Federal Waterproofing Co., formerly of Akron, and now located at Asbury Park, New Jersey, is producing an attractive line of ponchas, capes and surface clothing, especially adapted for army use. This company also makes hygienic sheets and hospital sheeting, and is said to have in contemplation a more elaborate line of waterproof garments. William Keyes, for many years prominently identified with waterproof clothing interests, is now connected with this company.

A Few of the Latest Tires.

A NEW DEMOUNTABLE TIRE RIM.

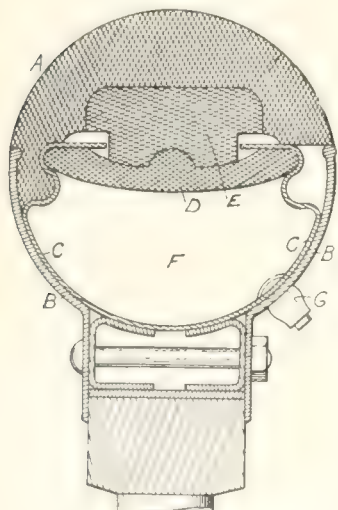
The drawing herewith shows a new demountable rim upon which a patent has been granted to Joseph M. Gilbert, and one-half assigned to the B. F. Goodrich Co., one-fourth to the Goodyear Tire & Rubber Co. and one-fourth to the United States Tire Co. This rim is so constructed as to make it impossible to assemble the parts and place the tire on the rim unless the latter is properly locked. The rim comprises two sections *A* and *B* which are provided with interlocking lugs. Section *A* has a series of lugs *C* which fit into recesses in the lugs *D* of section *B*, these lugs being so spaced around the rim that when the two parts are placed together and moved in opposite directions, the lugs will engage as shown. In order to prevent the two parts of the rim from moving relatively to each other, a lock *E* is arranged to fit between one pair of lugs. This lock is hinged at *F* so that it cannot become detached and mislaid. If the attempt is made to place the rim on the wheel with the lock out of engagement, it will strike against the felloe of the wheel. It is thus absolutely necessary to secure the lock before the auxiliary rim can be placed on the wheel, making it impossible to accidentally leave the rim sections unlocked.



THE NEW DEMOUNTABLE RIM.

ANOTHER PUNCTURE-PROOF PNEUMATIC.

Among the many types of automobile tires which have recently been patented is one of entirely new design. It is of the pneumatic type but has no inner tube. This tire is designed



SEATON TUBELESS PNEUMATIC TIRE.

with the intention of eliminating blow-outs and rim-cutting and to provide a construction by means of which a puncture will be automatically sealed. Referring to the drawing, the tire consists of a rubber tread *A*, the beads of which are clamped between the metal rim *B* and an inner metal band *C*. A curved band or bridge of rubber *D* is placed inside the inner rim, and between this bridge and the outer tread is a rubber filler *E*. The space *F* is filled with compressed air, through the valve *G*, and the pressure exerted by this air tends to force the band *D* outward, thus clamping the beads of the tread tightly between the two

NEW PUNCTURE PROOF PNEUMATIC TIRE.

Differing radically from the usual type of pneumatic, a new form of tire known as the Duplex has recently been placed upon the market. This tire is an adaptation of the two oldest principles applied to the



DUPLEX INNER TUBE.

inner construction of pneumatic tubes. A study of the cross sectional view tells the complete story. First, under the tread of the tire comes the semi-circular section *A*. This section is a special rubber composition which is claimed not to be affected by heat, cold, or moisture. Between the filler and the rim is a protector *B* which encloses the air tube *C*. The protector is constructed of rubber and

fabric, while the tube is of the usual construction but of smaller size. The Duplex inner tire can be installed in any casing and on any style of rim. It will be seen that while the tire is really pneumatic, it is at the same time puncture-proof, since the air tube is at a safe distance from the tread. [The Duplex Inner Tire Co., 3147 Locust street, St. Louis, Missouri.]

THE NEW GOODYEAR DETACHABLE TREAD TIRE.

The Goodyear Tire & Rubber Co. of Akron, Ohio, has brought out a new type of pneumatic tire which possesses features of interest. The new tire consists of the usual tire carcass and a detachable rubber tread. When the tire is deflated the tread is easily removed, but when under the proper air pressure the two parts possess the strength of a one-piece tire. This makes it possible to replace either the inside or the outside portion in a few minutes, either on the road or in the garage, whereby practically a new tire is obtained at about half the usual price. A special construction that gives the edges of the detachable tread an unstretchable bead, provides the necessary grip to hold it in place and to protect the inside from dirt and water. The tread portion does not bear any of the inner tube strain and no mechanical fastenings of any kind are necessary. The tread may be made with either a smooth surface or with anti-skid projections.

TO KEEP RIMS FROM RUSTING.

An employe of a large tire company noticed that many thousand tires were returned each year damaged by rim rust. He cogitated on the subject and finally invented what he calls an "anti-rust rubber coating," which he believes will absolutely prevent the rusting of the rim. It is made of rubber and graphite and a solvent. It dries in a few minutes and is impervious to water. The manufacturers believe that it should reach a sale of a million dollars a year, based on these calculations, viz.: that there are a million motor cars and trucks in operation in this country and that each one of these should use at least a can a year, at a dollar a can. Probably the manufacturers would be satisfied even if there proved to be a little shrinkage from these figures. [The Anti-Rust Co., Akron, Ohio.]

The Obituary Record.

GEORGE A. LEWIS.

GEORGE ALBERT LEWIS, president of the Beacon Falls Rubber Shoe Co., died at his home in Naugatuck, Connecticut, January 27, after an illness of several months. Mr. Lewis was born in Sharon, Connecticut, February 11, 1843. After attending school in Middletown and New Haven,



GEORGE A. LEWIS.

he entered, at an early age, the employ of the M. & C. T. Camp Co., of Winsted. During the Civil War he was a clerk in the commissary department of the army. In 1864 he became associated with the Goodyear Metallic Rubber Shoe Co., of Naugatuck (of which his father, Samuel J. Lewis, had been the first president) as a bookkeeper. His industry and ability gave him rapid advancement in this company, until he became its secretary and then its treasurer and general manager. He occupied this position when the company was merged with the United States Rubber Co., in 1892, and he was made a member of the first board of directors and of the first executive committee of the larger corporation; the other members of that executive committee being R. D. Evans, Samuel P. Colt, James B. Ford, Charles R. Flint, Henry L. Hotchkiss and Charles L. Johnson.

In 1898 Mr. Lewis left the United States Rubber Co. and soon after organized the Beacon Falls Rubber Shoe Co., of which he was made president—a position which he retained to the time of his death. The success of the Beacon Falls company was attributable largely to Mr. Lewis's executive ability, industry and popularity in the trade. In addition to his rubber interests he was for many years president of the Naugatuck National Bank. He was a man of unusual energy and was extremely active in his varied interests until about six months ago, when he had a slight stroke of paralysis. This was followed by a second stroke, from which, however, he seemed to recover; but a third stroke, occurring about six weeks ago, confined him to his house and from that time he grew gradually weaker until the end.

Mr. Lewis was a man of delightful personality, affable and agreeable to all alike, irrespective of social status. He was a man of spotless integrity and open and above board in all his dealings. He was highly esteemed all through the rubber trade,

but especially in the Naugatuck Valley, where for many years he was one of the leading citizens, conspicuously successful in business, active in civic affairs and interested in the general welfare.

He is survived by his wife and two sons—Tracy S. Lewis, treasurer of the Beacon Falls Rubber Shoe Co., and a younger son still in school.

ASA W. DAY.

Asa Wilton Day, president of the Day Rubber Co., St. Louis, Missouri, and former member of the Connecticut Legislature, died on December 28 at his home in St. Louis, of apoplexy, in his seventieth year.

Mr. Day was born in Marlborough, Connecticut, and was educated at Yale College. In 1865 he engaged in the cotton business with his brother, John W. Day. Four years later he married Mary R. Colt, of Detroit, Mich. In 1868 he was a member of the Connecticut Legislature. He went to St. Louis in 1882, and with his brother, Samuel J. Day, organized the firm of Day Brothers & Co., dealers in rubber goods. In 1884 he bought his brother's interest in the business and changed the firm name to Day Rubber Co.

LEON M. WOODFORD.

Leon M. Woodford, who was connected for thirty-five years with the Goodyear India Rubber Glove Manufacturing Co., of Naugatuck, Connecticut, died Wednesday, December 30, at his home in that place, after an illness that had continued for nearly a year.

Mr. Woodford was born in Naugatuck August 25, 1852, and educated in the South Berkshire Institute, in New Marlboro, Massachusetts. For a few years he was employed by the Western Union Telegraph Co., in Bridgeport, Connecticut, but over a third of a century ago became associated with the Goodyear company and continued with that company to the time of his death. During the last few years of his life he had charge of the office and was the company paymaster. He was very prominent in masonic circles and was active in the work of St. Michaels Episcopal Church, of Naugatuck.

RUBBER STAMPS IN DRAFTING FOR BLUEPRINTS.

It has been found that the rubber stamp, in addition to its manifold other uses, may be used to advantage in certain portions of drawings for blue prints—as, for instance, titles, general instructions, etc.—and that portions thus stamped will show up in the print as well as if drawn in the regular way. The tracing to be stamped is first sprinkled with powdered pumice stone, thoroughly rubbed in and the surplus blown away. The stamp, freshly inked, is then applied, firmly and evenly, after which lampblack is sprinkled over the stamped portion, pressed with a rag over the finger to soak up the ink, and the surplus blown off. When the tracing is dry the entire surface should be carefully cleaned with gasoline.

EXTENT AND GROWTH OF THE AUTOMOBILE INDUSTRY.

On October 1 last there were registered in the United States 1,254,971 automobiles, of which number 146,365 represented new registrations, 7,153 non-resident and 18,288 re-registrations. New York State is far in the lead in these figures, having a total registration of 129,441, of which 14,420 are new—California being second, with a total registration of 118,135, of which 6,479 are new. In 1908, the first year of really big production of automobiles in this country, there were 55,000 cars made, and since that time the demand and consequent output have steadily increased until with the past year's manufacture of 375,000 cars the result was an over-production of only a few thousand, while it is estimated that the annual absorption power in this country for motor cars in normal times is about 425,000.

THE FAMOUS HOUSE OF FABER.

THE rubber factory of Eberhard Faber, known as the Eberhard Faber Rubber Co., was established in Newark in 1858 by Christopher Roberts. Mr. Roberts, born in Manchester, England, in 1827, where he learned the business of rubber manufacturing, came to Providence, Rhode Island, in 1849, to install some rubber machinery for a relative in business there. He concluded to remain in this country, and established a small factory, removing to Newark in 1858. At that time he entered into an arrangement with Eberhard Faber, father of the present head of the firm, to manufacture rubber bands and rubber erasers, the entire product of the factory to be taken exclusively by Eberhard Faber and marketed in his name. This remarkable fact and one worthy of



EBERHARD FABER

note that the arrangement made at that time, by word of mouth only, was continued without interruption until the death of Mr. Roberts in 1903. During that entire period there was absolute harmony in the business relations of the two companies—a commentary indeed upon the high character of these two men.

From 1858 to 1884 the rubber factory was conducted under the name of Christopher Roberts. In 1884 the style was changed to C. Roberts & Co., a firm in which the present Eberhard Faber was a partner. In 1898 a corporation was formed known as the C. Roberts Rubber Co., of which Mr. Faber was vice-president. In December, 1910, the interests of the Roberts heirs were purchased by Eberhard Faber, and in 1913 the name was changed to the Eberhard Faber Rubber Co.

Eberhard Faber, the head of the house of that name since the death of his father in 1879, has assumed the management of the business. He has taken an active interest in all departments, including not only the rubber factory, but the large Brooklyn factory, where the lead pencils and penholders are manufactured. Tho an enthusiastic golfer and one of the best known whist players in the country, having formerly been president of the American Whist League, he is assiduous in his attention to the extensive business of which he is the head.

Mr. Faber is a prominent clubman, being a member of the Aldine Club, the Fox Hills Club and Richmond County Country Club of Staten Island, the New York Athletic Club, the German Club and the German Liederkrantz. His summer residence on the north shore of Staten Island enables him to conveniently indulge in his favorite sport of golf. During the winter months he occupies a spacious residence on West End avenue, New York.

REDUCTION OF RUBBER FOOTWEAR PRICES.

FULFILLING the general expectation that prevailed in the trade, the new price lists of the United States Rubber Co., issued on January 1, show a material price reduction through the entire line. The company issues both gross and net lists. The changes in the gross lists are few and immaterial, but the changes in the net list are general and substantial. Below there is shown in tabulated form the prices of a year ago of twelve different staple varieties of rubber boots and shoes, the new prices of this year, the amount of the reduction and the percentage of reduction. This list includes boots, lumbermen's shoes, arctics, gaiters and light shoes for both men and women. In the particular goods listed the reduction exceeds 10 per cent. in every instance except one, viz., women's croquets in cartons; and in one instance—in men's heavy four-buckle gaiters—the reduction is over 16 per cent. From this table it will be seen that the average reduction is over 11 per cent.

UNITED STATES RUBBER CO. NEW YORK
WEAR PRICES JANUARY 1, 1914

	Net Price 1913.	Net Price 1914.	Amount of Re- duction.	Per- centage of Re- duction.
Men's Duck Hip Boots	5.14	4.53	0.61	11.87
Men's Gum Storm King Boots	3.78	3.33	0.45	11.90
Men's Duck Short Boots.....	3.67	3.24	0.43	11.71
Men's Gum Short Boots	3.18	2.75	0.43	13.52
Men's One-Buckle Duck Perfection Boots	1.74	1.54	0.20	11.50
Men's One-Buckle Gum Perfection Boots	1.63	1.44	0.19	11.66
Men's Heavy Arctics	1.31	1.15	0.16	12.21
Men's Heavy Four-Buckle Gaiters	2.22	1.85	0.37	16.66
Men's Plain Sandals in cartons.	0.78	0.69	0.09	11.54
Women's Four-Buckle Gaiters in cartons	2.06	1.82	0.24	11.65
Women's Croquets in cartons...	0.54	0.49	0.05	9.26
Women's Storm Slippers in cartons	0.59	0.53	0.06	10.17

Both the trade and the consuming public ought to be very well satisfied with these lower prices. To be sure, crude rubber in January, 1913, ranged from 102 to 109, while in the January just past Upriver Fine ranged from 73 to 77—being a decrease of about 30 per cent. from the prices of a year ago. But crude rubber is not the only ingredient of rubber footwear (tho it is an exceedingly important one, notwithstanding the gibes of the humorist and the complaints of the chronically grouchy to the contrary) and the other items of cost have in some cases shown an increase—as, for instance, the general cost of labor. So that, taking the situation as a whole, the manufacturers seem to have lowered their prices as much as is consistent with conservative business policy. The other manufacturers will undoubtedly follow the schedule of prices announced by the United States Rubber Co.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

News of the American Rubber Trade.

PORTAGE CO. INCREASES CAPITAL STOCK.

At the annual meeting of stockholders of the Portage Rubber Co., of Akron, held January 19, the capital stock of that company was increased from \$1,000,000 to \$1,250,000, the new issue being for the purpose of adding to the working capital and to take care of the additions and improvements now being made in the plant. Only about \$100,000 of this issue is at present time to be offered at par to stockholders. The officers elected for the ensuing year are: James Christy, president; J. W. Miller, vice-president; A. S. Mottinger, secretary; W. W. Wildman, treasurer. These four are also members of the board of directors, the number of whom has been reduced to ten—the other six being: M. S. Long, John Kerch, J. D. Raw, Judge D. A. Doyle—all of Akron—Dr. O. S. Welty (Canal Dover) and Fred H. Snyder (Massillon).

HARTFORD RUBBER WORKS CO. INCREASES CAPITALIZATION.

The Hartford Rubber Works Co., of Hartford, Connecticut, a subsidiary of the United States Rubber Co., on December 27 filed with the secretary of state a certificate of increase of capital stock from \$1,000,000 to \$2,000,000. This new stock is a 6 per cent. preferred issue, divided into 10,000 shares of \$100 each, which it is stated have been entirely disposed of to holders of the common stock. The activity of this company's tire business is said to necessitate the operation of the present plant at full capacity, and should the anticipated further growth be realized added facilities will before long be required. It is to take care of these demands that the additional stock has been issued.

RUBBER COMPANY DIVIDENDS.

The Firestone Tire & Rubber Co. paid on January 15 a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock and $2\frac{1}{2}$ per cent. on its common stock.

The Goodyear Tire & Rubber Co. paid on January 1 the usual quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock.

The Lee Tire & Rubber Co. paid on January 10 its usual quarterly dividend of $1\frac{3}{4}$ per cent. on stock of record January 1.

The Manufactured Rubber Co. paid on December 31 its usual quarterly dividend of $1\frac{1}{2}$ per cent. on preferred stock of record on December 24.

The United States Rubber Co. has declared a regular quarterly dividend of $1\frac{1}{2}$ per cent. on common, 2 per cent. on first preferred, and $1\frac{1}{2}$ per cent. on second preferred stock—payable January 31 to stock of record on January 15.

The Fisk Rubber Co. has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its first preferred stock—payable February 1 to stock of record on January 21.

The Hood Rubber Co. has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock—payable February 2 to stock of record on January 31.

BOSTON WOVEN HOSE & RUBBER CO. INCREASE RECEIVING AND SHIPPING FACILITIES.

The growth of the Boston Woven Hose & Rubber Co.'s plant at Cambridge, Massachusetts, has made it necessary to provide for better facilities for freight handling. Fifteen thousand feet of land have been leased from the Boston & Albany Railroad, and side tracks installed so that twenty-two cars can be loaded and unloaded practically at the same time.

This also provides for receiving coal when necessary by rail, altho the larger part will be handled as at present from lighters coming through the Charles River Basin direct to the company's coal bunkers.

PFALTZ & BAUER INCORPORATE.

Pfaltz & Bauer, well known dealers in chemicals for the rubber and other industries, who have been in business for the past fourteen years and whose offices are located at 300 Pearl street, New York, have recently incorporated and will hereafter be known as Pfaltz & Bauer, Inc. The officers of the corporation are: Henry Pfaltz, president; Frank M. Bauer, vice-president and treasurer, and T. E. Price, secretary.

GOODYEAR TIRE & RUBBER CO. PLANS INCREASE OF CAPITALIZATION.

Word reached this office on January 28 that the Goodyear Tire & Rubber Co., of Akron, plans to raise nearly \$5,000,000 of new working capital, to be divided between preferred and common stock, and to be distributed as follows: A stock dividend of 20 per cent. to go to present common shareholders, who are also entitled to subscribe at par for their pro rata share of the new common stock to the extent of 30 per cent. of their present holdings. Holders of the preferred will be permitted to buy two shares of new preferred at par for each five shares now held and to buy one share of new common at par with every four shares of new preferred bought. Stockholders will vote on March 12 on an increase in the preferred capital from \$5,000,000 to \$7,000,000 and in the common from \$5,033,800 to \$8,000,000.

FORMAL OPENING OF REPUBLIC CLUB HOUSE.

The formal opening of the Republic Rubber Co. employees' club house, at Youngstown, Ohio, on January 15, was attended by a large number of persons, many of whom had received invitations sent out early in the month by the governing board.



THE REPUBLIC CLUB HOUSE.

Mention of this club was made in our July number, when a picture of the club house was shown; and the election of its board of governors was noted in our November issue. The accompanying cut shows another view of the building, which is located on the east side of Albert street, directly across from the general offices of the company. It is of brick, stone and steel construction, has lecture and reading rooms, rooms for indoor amusements of all kinds and grounds for outdoor sports as well, all employees of the company having the privileges of the main floors, while sustaining members—who are charged a yearly fee of \$1—have the privileges of the entire building. It contains also a restaurant, with a seating capacity of 1,200, where food is served at cost. This club house has aroused considerable interest and is expected to be of permanent advantage and benefit.

Consul General Julius G. Lay, of Rio de Janeiro, is in the United States on leave of absence, and will be at the New York office of the Bureau of Foreign and Domestic Commerce (315 Customhouse), on February 9 and 10, to confer with manufacturers and exporters who are interested in Brazilian trade.

NEW INCORPORATIONS

British Rubberized Fabric Co., Inc., January 23, 1914; under the laws of New York; authorized capital, \$25,000. Incorporators: Joseph N. Rousseau, 11 West Twenty-fifth street; William Schor, 15-17 East Sixteenth street, and Joseph Beiliss, 96 St. Mark's Place—all of New York. Location of principal office, Brooklyn, New York. To manufacture and deal in rubberized cloth, etc.

Buffalo Mill Supply Co., Inc., December 31, 1913; under the laws of New York; authorized capital, \$100,000. Incorporators: Willard G. McConnell, George F. Reach and John C. Van Vleet—all of Buffalo, New York. To deal in rubber goods, mill supplies, machinery, etc.

De Vere and Strang, Inc., December 27, 1913; under the laws of New York; authorized capital, \$10,000. Incorporators: Florence M. De Vere and Eugene L. De Vere, 263 Flatbush avenue, Brooklyn, New York; Kathryn P. Strang and Fred M. Strang, 10th Street, New York. To manufacture and deal in machine supplies, rubber, tires, etc.

Double Tread Tire Co., Inc., January 14, 1914; under the laws of New York; authorized capital, \$1,000. Incorporators: James Martin and Gertrude Martin, 145 East Fifty-third street, and Joseph Schwartz, 501 East Eighty-sixth street—all of New York. To deal in tires, etc.

The Elasto Co., Inc., January 16, 1914; under the laws of New York; authorized capital, \$30,000. Incorporators: John G. Ellendt, East Rochester, New York; Albert T. Bradley, Rochester, New York, and Henry G. Kennedy, Penfield, New York. To manufacture tire filler.

Empire Rubber & Tire Co., January 2, 1914; under the laws of New Jersey; authorized capital, \$1,000,000. Incorporators: Charles H. Baker, C. Edward Murray and J. Cornell Murray—all of Trenton, New Jersey. To manufacture rubber goods.

Giant Tire & Rubber Co., December 15, 1913; under the laws of Nebraska; authorized capital, \$20,000. To engage in the wholesale and retail business of motor vehicle tires and tubes.

Helix Tube Co., Inc., January 14, 1914; under the laws of New York; authorized capital, \$250,000. Incorporators: Geo. C. Howard and Clarence S. Houghton, both of 111 Broadway, and James D. Gabler, 311 West Forty-third street, New York. To manufacture auto tires, tubes, etc.

The McGraw Tire & Rubber Co. of New York, Inc., December 30, 1913; under the laws of New York; authorized capital, \$1,000. Incorporators: Russell F. Hobron, 1664 Broadway; William L. Levy and Maxwell Davidson, of 170 Broadway—all of New York.

Mechanical Auto Tube Co., December 10, 1913; under the laws of New Jersey; authorized capital, \$100,000. Incorporators: Benjamin F. C. Rothwell, 93 Frelinghuysen avenue; William B. Estes, 103 Emmet street, and Frank Forrest Estes, 103 Emmet street—all of Newark, New Jersey. Location of principal office, 145 Frelinghuysen avenue, Newark, New Jersey. To manufacture, buy, sell, import, export and generally deal in inner tubes and tires for automobiles, etc.

The Milton Tire & Rubber Co., January 8, 1914; under the laws of Massachusetts; authorized capital, \$40,000. Incorporators: Philip L. Hardy, 43 Maple avenue, Andover, Massachusetts; Herbert E. Pender, 109 Sedgwick street, Boston, Massachusetts, and Charles M. Riddock, 63 Elm street, Andover, Massachusetts. To manufacture, buy and sell tires, inner tubes, rubber goods, etc.

Oriental Rubber & Supply Co., Inc., December 15, 1913; under the laws of New York; authorized capital, \$10,000. Incorporators: Homer G. Martin, 228 Eightieth street; C. Roy Gedney, 594 Sixth street, and Richard F. Lucey, 340 Clifton Place—all of Brooklyn, New York. To manufacture automobile supplies, etc.

Peerless Key Co., Inc., January 12, 1914; under the laws of New York; authorized capital, \$3,000. Incorporators: Chas. J. Watson, 176 Fulton street, New York; Alexander B. Boyd, 674 Forty-fourth street, New York, and Otto Kretchner, 18 Sterling street, Newark, New Jersey. To manufacture rubber typewriter keys, etc.

Peerless Mill Supply Co., Inc., January 12, 1914; under the laws of New York; authorized capital, \$25,000. Incorporators: William H. Hines, Jr., Armor, New York; Walter L. Taylor, Hamburg, New York, and Geo. J. Twist, Buffalo, New York. To deal in rubber goods, belting, etc.

Pressed Asbestos Products Co., January 8, 1914; under the laws of New Jersey; authorized capital, \$75,000. Incorporators: Eurana de Bobula, 17 East Eleventh street, New York; Andrew W. Morton, Matawan Road, Matawan, New Jersey, and Titus de Bobula, 17 East Eleventh street, New York. To manufacture, buy and sell articles of merchandise, etc.

The Santo Rubber Co., December 24, 1913; under the laws of Delaware; authorized capital, \$1,000,000. Incorporators: George W. Dillman, B. M. Grawl and M. L. Horthy—all of Wilmington, Delaware. To buy, own and sell clothing, implements and tools having rubber as a component part.

The Smith Tire Valve Co., December 31, 1913; under the laws of Massachusetts; authorized capital, \$10,000. Incorporators: James H. Smith, 10 Waumbek street, Roxbury, Massachusetts; Reginald L. Robbins and E. Dwight Fullerton—both of 19 Congress street, Boston, Massachusetts. To manufacture, buy and sell valves.

Tire Co. of America, December 31, 1913; under the laws of Illinois; authorized capital, \$5,000. Incorporators: Milton Reinsberg, Marcus J. Golden and Essie Johnston. To manufacture, buy, job, sell and repair rubber tires, etc.

True-Fit Waterproof Co., Inc., January 17, 1914; under the laws of New York; authorized capital, \$100,000. Incorporators: Etta Harris, 540 West One Hundred and Forty-third street; Henry B. Singer, 411 West End avenue, and Abraham Rubenstein, 790 Riverside Drive—all of New York. To manufacture cravenette goods, etc.

The Ten Broeck Tyre Sales Co., December 12, 1913; under the laws of Ohio; authorized capital, \$5,000. Incorporators: Herbert C. Upson, J. H. Bromwell, R. T. Durrett, H. L. Lewman and John E. Bruce. To deal in Ten Broeck auto tires.

The Easton Manufacturing Co., November 24, 1913; under the laws of Pennsylvania; authorized capital, \$5,000. Incorporators: William F. Sanders, Brantford, Ontario, Canada; L. H. Seiple, William J. Seiple, John C. Raisley, Asher Seip—all of Easton, Pennsylvania. To manufacture and sell chemicals and chemical compounds.

HARMER RUBBER RECLAIMING WORKS.

The Harmer Rubber Reclaiming Works, East Millstone, New Jersey, which suffered a disastrous fire loss some 18 months ago, have rebuilt and greatly enlarged their plant, and are now working day and night shifts. Harmer shoddy is said to be uniform and clean, and is in active request. The mill is eligibly located from a shipping standpoint, having both rail and water facilities, and is protected by an elaborate fire-fighting equipment. Mr. A. Marcus, connected with the company since its inception, is the general manager.

RESIGNED FROM THE ANCHOR PACKING CO.

J. D. Maguire, president of the Maguire Rubber Co., and H. N. Green, of the Manhattan Rubber Manufacturing Co., have resigned from all official connection with the Anchor Packing Co. Mr. Maguire was president and one of the directors. Mr. Green was treasurer and also a director.

TRADE NEWS NOTES.

The New York Commercial Co. paid another dividend of 5 per cent. on January 20. This makes a total of 30 per cent. that has been paid to its creditors since the company went into liquidation last April. According to the trustees, another dividend may be looked for before the affairs of the importing house are finally closed.

A voluntary petition in bankruptcy has been filed by the Springfield Tire & Rubber Co. of Springfield, Ohio, claiming liabilities amounting to \$15,223.02 against assets valued at \$8,441.94. The Citizens National Bank of Springfield is named as the principal creditor.

Certificates of dissolution have been filed with the Secretary of State by the Empire Tire Co. and the Empire Rubber Co.—both of Trenton, New Jersey—the dissolution of these companies being necessitated by the formation of the Empire Tire & Rubber Co. of that city.

The council of the city of Ithaca, New York, has authorized the purchase of 500 feet of fire hose, while recommendations have been made for similar supplies in other cities, as follows: Altoona, Pennsylvania, 1,000 feet; Austin, Texas, 7,000 feet; Cincinnati, Ohio, 10,000 feet; Holyoke, Massachusetts, 3,000 feet; Jersey City, New Jersey, 12,000 feet; Lima, Ohio, 1,000 feet; Seaford, Delaware, 500 feet; Utica, New York, 2,000 feet; and at Ludlow, Massachusetts, the purchase of hose is being considered.

The Minneapolis headquarters of the Pennsylvania Rubber Co., makers of Vacuum Cup Oil Proof Tires, has been moved to 12 South Eighth street, additional space having been required. This branch, under the management of F. J. Walpole, is the distributing center for the entire Northwest, and its business is said to have doubled every year for the past three years, a rate of increase the same as that enjoyed by the factory. This branch has recently established an office in St. Paul, to handle the business of that city.

A new foundry is being erected at Akron, Ohio, for the Diamond Foundry Co., a concern of which Mr. Emil Krill is the head, and which has been organized with a capital stock of \$30,000, for the manufacture of rubber molds and parts for rubber working machinery. The company expects to commence operations some time in February.

The capital stock of the Mecca Tire Co., of Philadelphia, Pennsylvania—a Delaware corporation—has been increased from \$100,000 to \$500,000.

A company has been incorporated at Wilmington, Delaware, for the establishment of a tire manufacturing industry at Toronto, Ontario. The capital stock of the new concern—The Blowers-Rheubottom Rubber Co.—is \$500,000, and the incorporators are: W. R. Blowers, of Toronto; A. Rheubottom, of Pittsburgh, and Geo. D. Hopkins, of Washington.

A review of the value of materials used in the electrical industry of the United States during the year 1913 places the value of rubber-covered wire at \$21,000,000, this amount being \$3,000,000 in excess of the quantity used in 1912, \$6,000,000 greater than the requirements for 1911, and \$9,000,000 above those of 1910.

THE MECHANICAL CO.'S WELFARE WORK.

The Mechanical Rubber Co. of Cleveland, Ohio, has a factory welfare organization. A "Welfare Committee," made up of various employees, meets regularly, and through its organization the employees enjoy many benefits. There are classes in English and library privileges for both men and women, classes in sewing and embroidery for the girls, also gymnastics and basketball games. The unthrifty are helped to save in order to enjoy an outing in the summer at some healthful place. The results show clearly how beneficial the work to the general welfare.

THE REPORT OF THE WALPOLE RECEIVERS.

The receivers for the Walpole Tire & Rubber Co. filed their report on January 5 in the United States District Court of Eastern Massachusetts. The report shows that they received claims numbering 461 for a total sum of \$1,680,671.84. Of that sum they recommended to the court that payment in full be made on claims aggregating \$505,599.16. The receivers recommend that payments to the amount of \$114,638.65 be paid out of a total amount of \$119,524.52, and suggest that claims of \$581,347.49 be adjusted by agreement or by the court, and if by the latter the same be referred to a master to be heard.

They disallow claims aggregating \$345,903.64 and suggest that if objection to the disallowance is made by any creditor the claim of the latter be referred to a master for hearing. They recommend until further order of the court claims of \$118,586.65, based on notes held by banks, be suspended.

On January 26 word was received from Boston that claims amounting to \$500,000 against the Walpole Tire & Rubber Co. had been allowed by the Federal Court. The receivers, Robert O. Harris and Robert C. Fisher, were awarded \$6,000 each.

HOSE AWARDS.

Contracts awarded during the month for fire hose to cover the requirements of the various cities include the following: Bi-Lateral Fire Hose Co., 300 feet, Savannah, Georgia; 1,000 feet, La Crosse, Wisconsin. Chicago Fire Hose Co., 1,500 feet, Peru, Indiana. Diamond Rubber Co., 400 feet, Savannah, Georgia. Empire Rubber & Tire Co., 400 feet, Savannah, Georgia. Eureka Fire Hose Co., 1,000 feet, Savannah, Georgia; 1,500 feet, Jacksonville, Florida; 1,000 feet, Davenport, Iowa; 350 feet, Council Bluffs, Iowa. Manhattan Rubber Manufacturing Co., 2,000 feet, South Omaha, Nebraska; 650 feet, Council Bluffs, Iowa. New Jersey Car Spring & Rubber Co., 400 feet, Savannah, Georgia. United & Globe Rubber Manufacturing Cos., 1,000 feet, Flint, Michigan. The Isthmian Canal Commission has awarded to the Goodyear Tire & Rubber Co. contract to supply 100 feet of rubber suction hose.

THE ALLIANCE RUBBER CO.

The Alliance Rubber Co., of Alliance, Ohio, recently commenced the manufacture of a diversified line of rubber merchandise, including molded and mechanical goods and drug sundries, in its new plant, located in the factory section of Alliance. The new factory is 150 feet long and 50 feet wide, and is well equipped with an up-to-date line of motor driven machinery.

An interesting specialty made by this company is a line of electrician's gloves, subjected before shipment to an electrical test ranging from 50 to 100 per cent higher than the voltage for which the gloves are guaranteed. The company was organized and is being operated by Milton Bejact and George C. Russel, local men, and is largely supported by local capital.

RECENT CUSTOMS RULINGS.

Protests by the F. W. Woolworth Co. and L. Mendelson & Co., of New York, against the classification of rubber brooches under "Jewelry"—on which the duty is 60 per cent.—have been sustained by the board, Collector Malone writing that his office erred in returning them under this classification, these articles being properly dutiable under the old law as "manufacturers of hard rubber," at 35 per cent. ad valorem duty.

The Board of United States General Appraisers has sustained the protest of O. G. Hempstead & Son, of Philadelphia, against the classification under paragraph 479 of the tariff act—"waste not specially provided for"—of a consignment of split and defective rubber balls, and has permitted these to enter free of duty, as provided under paragraph 591—"crude India rubber, scrap and refuse, fit only for remanufacture."

LOWER PRICES FOR SEALING GOLF BALLS.

The new catalog of A. G. Spalding & Bros., issued January 1, shows a reduction in the price of all the \$9 per dozen golf balls made by that company to \$7.50 per dozen. This reduction is not made owing to the tariff, as of course crude rubber has come in free for many years, but is made because of the decreased cost of crude rubber. The company states that its action in reducing golf ball prices is simply in harmony with its action in other lines where it has reduced prices following a reduction in the cost of raw material.

LEE TIRE & RUBBER CO. IMPROVEMENTS AND ADDITIONS.

The Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has appreciably increased its equipment and capacity during the past few months, having installed several 60-inch mills, a new calender, three new tire-making machines and several hundred cores and side rings for the manufacture of pneumatic automobile tires, as well as completing a 600 h. p. addition to the boiler house. The cost of these improvements and additions is estimated at between \$50,000 and \$75,000, and the company anticipates an increase of output for 1914 at least equal to that effected last year, during the last nine months of which tire sales are said to have quadrupled and the production of other departments to have increased more than 50 per cent.

THE BRITISH-AMERICAN MANUFACTURING CO.

The British-American Manufacturing Co., incorporated under the laws of the State of Delaware, November, 1913, was organized for the purpose of treating various fabrics with the Mackintosh process, said to render cloth substances so treated waterproof, rot and mildew-proof, and is guaranteed an absolute water repellent. The company is showing an exceedingly attractive line of samples and has already secured large contracts from the United States and Canadian Governments for ponchos and military overcoats.

The British-American Manufacturing Co. (under the management of which is the American Raimee Co.) is capitalized for \$300,000 and its officers are: E. A. Brinckerhoff, president; W. M. Mackintosh, vice-president, and Dr. L. C. Himebaugh, secretary and treasurer. The principal factory of the company is located at Laurel, Maryland. The W. L. Barrell Co., 8 Thomas street, New York, is selling agent.

Morgan & Marshall, East Liverpool, Ohio, are making the Stein-Laplock tire, made for several years by the Stein Double Cushion Tire Co., of Akron, Ohio. The superintendent of the East Liverpool plant is Harvey Miller, well known among the practical rubber men of the country.

INNER TUBES AS LIFE SAVERS.

An incident that recently occurred in Hartford, Connecticut, is well worth a wide publication, because the successful rescue of life made at that place by the use of inner tubes might possibly be repeated in some other place later. On the afternoon of January 8 a number of boys were skating on Park river, near the factory of the Hartford Rubber Works. They were playing "Follow the Leader" and the leader, after the manner of boys, was taking his followers over thin ice. Several of them broke through. The workmen just leaving the factory heard their cries and could see them in the twilight trying to hold on the thin edge of the ice. Somebody bethought him of the possibilities of the inner tubes and the workmen ran into the factory, brought out some inflated tubes, tied ropes to them and threw them to the boys and in this way rescued three of them. A fourth boy, who had gone under the ice, was taken out too late to resuscitate.

As there are at least a couple of million inner tubes around the country, distributed among auto owners, garages and in dealers' stocks, the life-saving possibility of this article is an excellent thing to keep in mind.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE INVENTION AND MANUFACTURE OF RUBBER STAMPS.

Various opinions are expressed as to when and by whom the rubber stamp was invented, altho it seems to be agreed that, while experiments were being made at the same time in other parts of the country, the first rubber stamps were actually produced in Auburn, New York. One authority makes it appear quite clear that James Orton Woodruff of that city was the first to conceive the idea of printing by the use of vulcanized rubber letters, this idea being suggested to him upon seeing a stamp made of cut-out rubber letters glued to a curved block of wood in use for printing on wash tubs; and that, with the aid of his uncle, Urial Woodruff, a dentist, he succeeded in making a vulcanized rubber stamp, using for this purpose a regular dental vulcanizer, and in establishing a business for their manufacture and sale. Later he disposed of this business and embarked in the exploitation of an impervious oil barrel, a patent for which had been granted him in 1865; so that it seems fairly safe to place the date of his stamp invention a little earlier than this, or not later than 1864. The first mounts for stamps of his production were made at Seneca Falls, New York, of black walnut, turned in one piece. One of the earliest stamps made was an American Express Co. C. O. D. stamp, and the first rubber stamp advertisement appeared in the "Northern Christian Advocate," a Methodist weekly.

There seems to be no doubt, however, that the first patent on a process for the manufacture of rubber stamps was that granted April 22, 1873, to Geo. K. Cooke, whose instructions to beginners or apprentices in stamp making, prepared about 35 years ago, were recently published in the London "Commercial Stamp Trade Journal." These instructions are of historic, if not of present practical interest, showing, as they do, the progress that has been made in this particular branch of the rubber manufacturing industry in the past thirty-five years. During this time many new compounding formulae and processes have been employed in the production of this useful article, resulting in great saving of time and expense over the early patented process.

RUBBER STAMPS IN DRAFTING FOR BLUEPRINTS.

It has been found that the rubber stamp, in addition to its manifold other uses, may be used to advantage in certain portions of drawings for blueprints—as, for instance, titles, general instructions, etc.—and that portions thus stamped will show up in the print as well as if drawn in the regular way. The tracing to be stamped is first sprinkled with powdered pumice stone, thoroughly rubbed in and the surplus blown away. The stamp, freshly inked, is then applied, firmly and evenly, after which lampblack is sprinkled over the stamped portion, pressed with a rag over the finger to soak up the ink, and the surplus blown off. When the tracing is dry the entire surface should be carefully cleaned with gasoline.

EXTENT AND GROWTH OF THE AUTOMOBILE INDUSTRY.

On October 1 last there were registered in the United States 1,254,971 automobiles, of which number 146,365 represented new registrations, 7,153 non-resident and 18,288 re-registrations. New York State is far in the lead in these figures, having a total registration of 129,441, of which 14,420 are new—California being second, with a total registration of 118,135, of which 6,479 are new. In 1908, the first year of really big production of automobiles in this country, there were 55,000 cars made, and since that time the demand and consequent output have steadily increased until with the past year's manufacture of 375,000 cars the result was an over-production of only a few thousand, while it is estimated that the annual absorption power in this country for motor cars in normal times is about 425,000.

DURING THE FISCAL YEAR 1913 ENDING NOVEMBER 30 LAST 7,127 motorcycles were registered in the State of Massachusetts.

TRADE NEWS NOTES

The Pennsylvania Rubber Co., of Jeannette, Pennsylvania, has formally opened its New York branch at 1889 Broadway, where commodious and attractive quarters have been provided for the display and distribution of its product. This branch store has a frontage of 35 feet on Broadway and extends through the block to Columbus avenue. It is under the management of C. C. McCullough.

A company known as the Consumers Tire & Rubber Co., Limited, has been incorporated at St. Catharines, Ontario, with a capital stock of \$800,000, to manufacture rubber goods. Among the incorporators are A. W. and W. M. Marquis.

The Werner & Pfleiderer Co., of Saginaw, Michigan, which manufactures rubber mill machinery, is to erect a new factory, plans for which have already been completed, altho construction work is not to commence until early Spring.

A new building is being erected at Kansas City for occupancy by a branch of the Fisk Rubber Co., of Chicopee Falls, Massachusetts. This building, for which it is said a long lease has been signed by the Fisk company, is to be four stories high, of reinforced concrete, will be located at Grand avenue and Twentieth street, and is to be completed not later than July 1 next.

A new schedule of hours went into effect in Connecticut rubber factories on January 1, to comply with the requirements of the law which limits the number of hours per week that women may be employed to fifty-five. Work will hereafter commence at these factories at 7 o'clock and end at 5:10, with an intermission of one hour at noon, making the working day nine hours and ten minutes long instead of ten hours as heretofore.

The Batavia Rubber Co., of Buffalo, New York, has established a branch for the distribution of its "Security Tread" tires at 844 North Broad street, Philadelphia, with E. M. Stimson as manager.

The corporate name of the Consolidated Rubber Tire Co., of New York, has been changed to the Kelly-Springfield Tire Co.

A fire which lasted for about an hour and did damage estimated at \$2,500, occurred recently at the plant of the Housatonic Rubber Works at Bridgeport, Connecticut—caused by an attempt on the part of employees to thaw out a frozen water pipe with a torch, the blaze from the torch spreading to bales of rubber and paper.

The Barnard-Michael Tire Co., Inc., has been formed at Buffalo, New York, and duly incorporated, for the exclusive distribution in that section of Kelly-Springfield tires. The officers of the new company are Robert S. Barnard, president, and S. M. Michael, secretary and treasurer, and the office is located at 912 Main street.

A motion picture film company has recently produced a film showing the process of tire making, from the preparation of the crude rubber to the final testing of the finished product. This film is from pictures taken at the plant of the Pennsylvania Rubber Co. at Jeannette, Pennsylvania, and besides being unusually interesting and instructive, is remarkably clear.

The Voorhees Rubber Mfg. Co., of Jersey City, New Jersey, has opened another branch store at 41 Seventh street, Philadelphia.

HOLMES PACKING & SUPPLY CO. OPEN RUBBER STORE AT PEORIA.

The Holmes Packing & Supply Co., of 12-14 South Jefferson street, Chicago, Illinois, is opening a store in Peoria for the wholesale and retail distribution of rubber goods exclusively. This store, which is to handle every article made of rubber, and will be known as the Peoria Belting & Rubber Works, is located at 506 Adams street. The company is now, we understand, in the market for all kinds of rubber goods.

PERSONAL MENTION.

William F. Berrien, for a number of years manager of the Philadelphia branch of the Dayton Motor Car Co. and an active member of the Trade Association of that city, has been appointed sales manager of the Batavia Rubber Co. at Batavia, New York.

A. T. Carnahan, formerly with the Firestone Tire & Rubber Co., Akron, Ohio, is now the New York district representative of the Vulcan Rubber Co., of Erie, Pennsylvania.

F. S. Wilson, vice-president of the Thermoid Rubber Co., of Trenton, New Jersey, has, with his family, taken up a residence in San Francisco and will make that city his future home.

C. E. Ames has been appointed general sales manager for the Divine Tire Co., of Utica, New York, with headquarters at Chicago.

Edward Gallagher, who was with the Boston Woven Hose & Rubber Co. for 24 years—in charge of the testing and inspection departments and later as foreman of the brass foundry and brass finishing departments—is now with the B. F. Goodrich Co. at its Boston branch.

George S. Atwater, of Boston, has been engaged by the Century Rubber Co., of Plainfield, New Jersey, as sales manager.

A. H. Alden, of the New York Commercial Co., sailed from New York on the *Minnewaska* on January 24, for Europe. He will join Mrs. Alden and his son Victor, who are now in Bristol.

E. Stevenson, director of A. H. Alden & Co., Ltd., of London, arrived in New York on the *Carmania* February 1.

CHESTER J. PIKE, JR., BECOMES "HUBMARK" PRESIDENT.

The presidency of the "Hubmark" Rubber Co., Boston, has been conferred upon Chester J. Pike, Jr., who is also its manager. Mr. Pike's business career has been confined exclusively to the rubber business, having been divided, prior to his association with the "Hubmark" company at the time of its formation in May, 1912, between the Beacon Falls Rubber Shoe Co., the Converse Rubber Co. and the Congress Rubber Co.

NEW MEMBERS OF THE RUBBER CLUB OF AMERICA.

At a recent meeting of the executive committee of The Rubber Club of America the following new members were elected: E. C. McGraw, representing the McGraw Tire & Rubber Co., of East Palestine, Ohio; Robert Badenhop, of 67-69 Wall street, New York and D. A. Cutler, representing the Acushnet Process Co., of New Bedford, Massachusetts, were elected firm members. Edward B. Aldrich, vice-president of the Continental Rubber Co., of New York, was elected active member; and W. F. Gillespie, of the Stamford Rubber Supply Co., Stamford, Connecticut; and Mr. R. E. Tyson, of Tyson Brothers, Inc., of Carteret, New Jersey, were elected associate members.

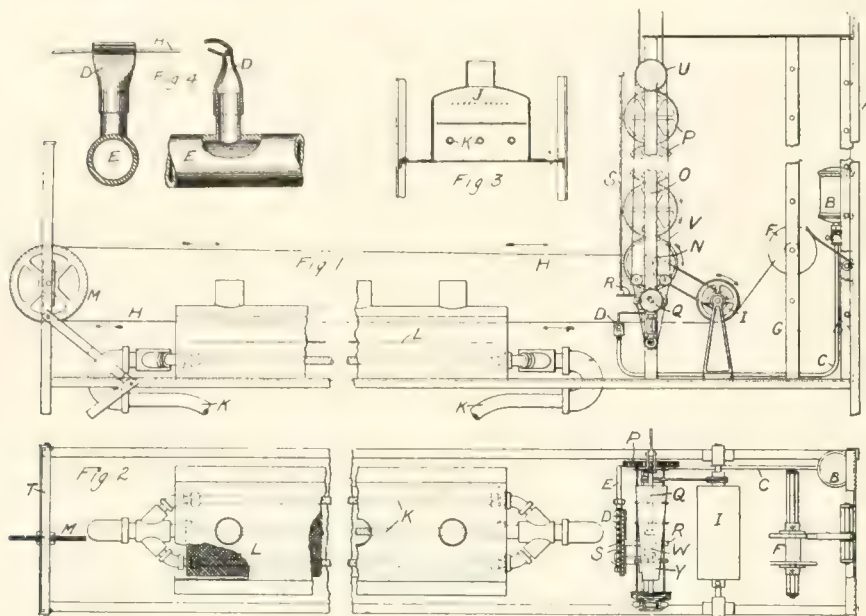
DR. DANNERTH RECALLS HIS CONFERENCE SUGGESTION.

In the columns of this issue devoted to interesting news from foreign quarters there will be found an article entitled "The Standardization Committee's Report," which gives a brief summary of the report submitted by the committee of the Rubber Growers' Association of London, appointed to consider the topic of standardization. The committee recommends the establishment of a testing station and an experimental factory so that plantation rubber can be standardized and sold under proper classifications. In connection with this action of the London association, Dr. Frederic Dannerth, the consulting rubber chemist, who acted as honorary secretary at the International Rubber Conference held in New York in September, 1912, recalls the proposal that he laid before that conference that a central testing laboratory for the rubber industry should be established by American manufacturers at their joint expense and for their mutual benefit. Tho the English planters have got the start in this respect, Dr. Dannerth still believes that the American manufacturers will find it so much to their interest to have such a testing and experimental plant that its establishment will not be very much longer delayed.

New Machines and Appliances.

A NEW WIRE COATING AND SPOOLING MACHINE.

ONE of the principal difficulties that have been experienced in machines for covering wire with insulating material has been the removal of the surplus material by means of a



A NEW WIRE COATING AND SPOOLING MACHINE.

wiping device, since such devices usually tend to "spot" the insulation and thus prevent the use of such machines for perfectly insulating very small wires. A new machine designed for continuously and rapidly coating a large number of wires simultaneously has been patented by Myron D. Shiverick, of Albany, New York. One of the features of this machine is the new form of coating tip and the method of supplying the coating material to the tip.

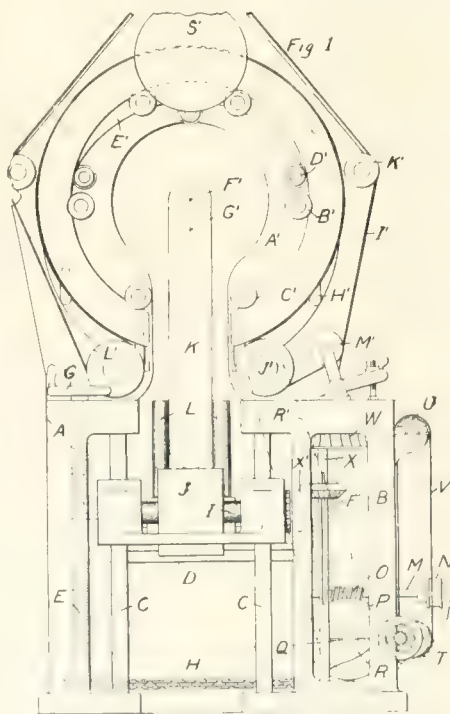
In the accompanying drawings Fig. 1 shows a side elevation of the machine, Fig. 2 a plan view, Fig. 3 a section through the drying oven, and Fig. 4 two views of the coating tip through which the wire passes. Attached to the frame *A* is a tank *B* which contains the insulating material in liquid form. The flow of this material to the coating tips through the supply pipe *C* is controlled by a stop-cock directly below the tank. The coating tips *D* are located side by side on the horizontal pipe *E*, and any number of tips may be employed according to the number of wires to be coated. The uncoated wire is wound on reels *F*, which are placed in uprights *G*, the height of the frame being controlled by the number of reels to be placed therein. At *H* is shown a single wire passing under a guide roller *I* and through the tip *D*, from which point it is conveyed through one of the holes *J* in the end of the oven. The oven is heated in any suitable manner, such as by a gas burner *K*, the wire being prevented from coming into direct contact with the flame by means of a screen *L*. By the

time the wire has passed through the oven the insulation is thoroughly baked on, and the coated wire then passes around one of the pulleys *M* on the shaft *T* and back to the machine, where it is wound on a spool *N*. Any desired number of these wind-up spools are located on the uprights *O* and driven by gears *P*. A reciprocating shuttle *W*, operated by the screw-shaft *Q*, provides a means of winding the wire evenly on the spools. This shuttle bears a T-shaped bar *R*, in which are a number of vertical pins *S* which guide the wires as they come from pulleys *M* onto the wind-up spools. At the top of the standards *O* is a conical speed pulley *Y*, connected by a belt with a similar cone on a countershaft (not shown). This pulley bears a gear *U* and drives the screw-shaft *Q* through the chain *V* and a set of bevel gears, by means of which the shuttle is reversed in winding up the coated wire on the spools.

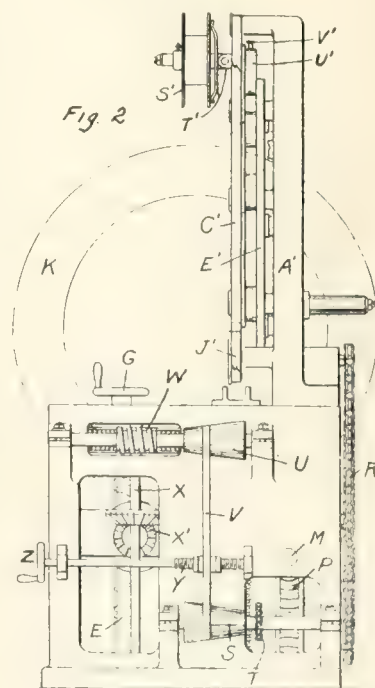
ANOTHER TIRE WRAPPING MACHINE.

As a general rule machines adapted for wrapping the treads of tires are designed for that one purpose only, but the machine illustrated in the accompanying drawings and upon which patents were recently granted, is designed for wrapping and unwrapping tires before and after the vulcanization process, for wrapping tires for shipping purposes, for removing the wrapper and also for covering wires and cables with paper, tape or

cloth. Fig. 1 shows a front view of the machine, while Fig. 2 shows a side view, looking from the right of Fig. 1. The feeding



THE NEW TIRE WRAPPING MACHINE.



SIDE VIEW OF NEW TIRE WRAPPING MACHINE.

mechanism, or that part which rotates the tire, may be described as follows: The supporting frame is made in two parts *A* and *B*

and supports four upright guides *C* upon which reciprocates the carriage *D* which is moved vertically by the screws *E* and *F*. The screw *E* is actuated by the hand wheel *G* and communicates motion to the screw *F* through the chain *H*. Two horizontal shafts *I*, having their bearings in the carriage *D*, carry rollers *J* against which the tire *K* rests in revolving. Two adjustable verticle rollers *L* hold the tire in position during its revolution. In order to rotate the rollers *J* for turning the tire the following mechanism is employed: The driving shaft *M*, provided with a clutch *N*, bears a worm *O* which meshes with a worm gear *P* mounted on the shaft *Q*. This shaft bears a sprocket wheel *R* which drives the cone pulley *S* through the chain *T*. A second cone pulley *U*, which is driven by the belt *V*, drives the worm gear *W* which is mounted on the upper end of the splined shaft *X*. This shaft drives a pair of beveled gears *X'* which in turn drive the rollers *J*.

The mechanism for winding or unwinding a strip of material about the tire during its revolution on the rollers *J*, embodies another mechanism as follows: Mounted on the upper part of the frame is a second frame *A'* which is in the shape of a horse-shoe. On the front face of this frame are a number of flanged rollers *B'* which bear a broken ring or annulus *C'*. Also secured to the face of the frame are a second series of flanged rollers *D'* which bear a second annulus *E'*. These two annuli are mounted eccentrically to each other; that is, the center of rotation of the first is at *F'* and of the second at *G'*. These two parts are connected by links *H'* which hold them together but allowing them to revolve on different axes. The two broken rings are revolved by means of a belt *I'* passing over a roller on the shaft *J'*, over a series of rollers *K'*, over roller *L'* and thence around the outer ring *C'*. In order to maintain a uniform tension in the belt, a tightening device *M'* is employed. Motion is communicated from the shaft *Q* through the sprocket chain *R'* to the shaft *J'* and thence to the belt *I'*.

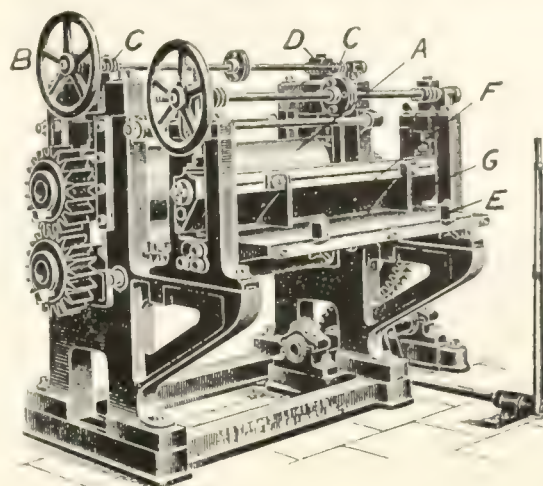
The material to be wrapped around the tire is wound upon a bobbin *S'* which rotates against an adjustable tension spring *T'* in order to keep the wrapper at an even tension. The shaft upon which the bobbin is mounted extends through a link or crank *U'* connecting the two annuli. The end of this shaft is drilled to receive a pin *V'*. If it is desired to wrap the tire, this pin is disengaged from the bobbin shaft so that the bobbin is free to turn independently of the link *U'*. If a wrapper is to be removed from a tire and wound up on the bobbin so that it can be used again, the pin *V'* is engaged with the bobbin shaft so that the latter cannot rotate independently of the annuli. Thus, as it passes around the tread of the tire the wrapper will be removed and wound up on the bobbin.

By means of a flanged roller on the screw shaft *Y*, which is operated by the hand wheel *Z*, the belt *V* may be moved back and forth over the cone pulleys to regulate the speed at which the tire is revolved. [U. S. Patent No. 1,079,601, granted to C. Kuentzel and assigned to the Goodyear Tire & Rubber Co., Akron, Ohio.]

NEW BELT MAKING MACHINERY.

The two illustrations herewith show some new forms of apparatus designed for the manufacture of balata belting. Fig. 1 shows a belting calender which is used for spreading on the outer covering of balata after the fabric of the belt has been built up. It is also used for consolidating the belt after being previously folded on the hot table. The top roll *A* is suitably grooved so as to leave an impression on the surface of the belt. This roll may be adjusted vertically by means of the hand wheel *B* operating worms *C* and worm gears *D* the same as in the ordinary calender. The belt is inserted between guide rollers *E* and passes under the steam heated gage *F* between the guides *G*, which prevent the balata from overrunning the edges of the belt. Scraper gages, not shown, are provided between the gage *F* and

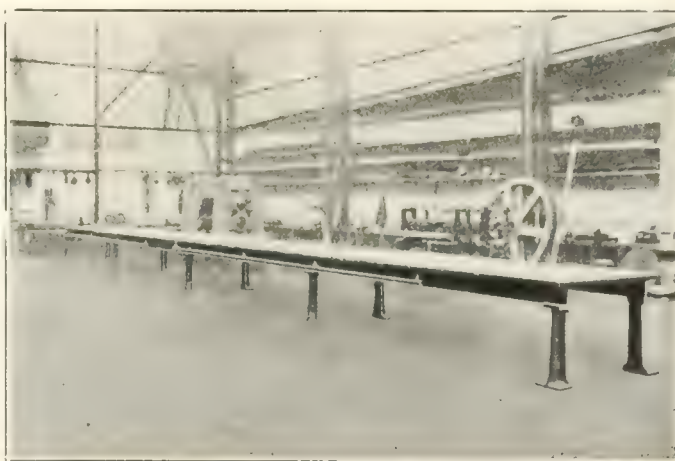
the calender rolls to trim the edge of the belt. The machine is driven through a pair of reduction gears and countershaft



BALATA BELTING CALENDER.

either by a belt or by direct connection through spur gears to the main drive shaft.

Fig. 2 shows a section of a hot table for building up balata belting in great lengths. The whole table, only a part of which is shown herewith, is 130 feet long and 4 feet wide. It is built in short hollow sections of riveted mild steel plates carried on steel channels and cast iron stands from the floor, each section forming an individual steam chest or hot plate. The heating and draining arrangements are designed to provide a uniform temperature throughout the whole length of



STEAM TABLE FOR BUILDING UP RUBBER.

the table, the separate sections being connected with a common steam line. Such hot tables can be constructed in any length and width to meet the requirements of any size of belt. [Bertrams Limited, Edinburgh, Scotland.]

A NEW RUBBER TRIMMED AUTOMOBILE CURTAIN.

A new style of automobile side curtain—known as the "New Scott"—has been brought out by a Western manufacturer. This curtain is adjusted and operated from the inside of the car by means of fixtures which are easily attachable. The curtains are held securely in place when in use by hooks or other simple fasteners, and when released automatically roll up out of sight. They are trimmed in heavy rubber drill, in drab or black, as preferred, or may be had with imitation leather or mohair trim. [Star Storm Front Co., Troy, Ohio.]

NEW TRADE PUBLICATIONS.

THE LITERATURE OF THE UNITED STATES RUBBER CO.

THE United States Rubber Co. in its annual issue of catalogs has not as yet reached the number of kinds associated—in quite another line—with the energetic pure food advertiser who lays such stress upon his "57 varieties," but it is not far behind him, as its catalogs and price lists issued on the first of January numbered forty-two—which might be called a library of modern rubber footwear.

Of these 42 different publications 10 are handsome catalogs of a uniform size of $4\frac{1}{2} \times 8\frac{1}{2}$ inches; that is, good pigeon-hole or coat-pocket size. These are books of 64 pages, unstintedly illustrated and bound in handsome covers. These ten volumes describe the footwear of the following ten companies: The American, Banigan, Boston, Candee, Goodyear Glove, Lycoming, Meyer and Jersey, Malden, Wales-Goodyear and Woonsocket. The cover designs are strong and striking and while all entirely different in design are uniformly artistic.

The text is printed on high grade heavy coated paper, which brings out the halftone illustrations in the most effective way. These halftones, by the way, are of large size and are photographed direct from the object, giving a very exact idea of what the different boots and shoes look like and the shapes of the different lasts.

In addition to the larger illustrated catalogs there are 32 small price lists about $3\frac{1}{2} \times 6\frac{1}{2}$ inches in size. Ten of these give the gross prices of the different brands mentioned above, and another set of ten gives the net prices of the same brands. Formerly the company issued only gross lists with an accompanying card showing what the net would amount to when the various discounts were deducted, but as the retailer was quite likely to lose his discount card it often devolved upon him to work out from his own personal knowledge of mathematics how much a boot with a gross price of \$3.67 would cost him with a chain of discounts of 15, 8 and 3 per cent. That was a problem sufficient to drive many a retailer into socialism, if not open anarchy. Now they have been relieved from this mental strain and can tell at a glance just what they will have to pay for any particular item they wish to put in stock.

The other price lists include those of the Empire brand, of the much advertised Everstick Rubber, the Felt Boot and Knit Boot combinations, the Unika brand of Tan and White Rubbers, a list of miscellaneous goods and another list—paradoxically called the Unlisted List—which shows special shoes that can be had if desired but for which evidently the company is not anxious to excite too great a demand.

One of President Wilson's strongest desires in relation to large corporations is that their operations shall be conducted with great publicity. In view of these 42 different catalogs and price lists, he cannot complain that the selling department of the United States Rubber Co. is trying to hide anything.

METALINE.

In a neat booklet, the Metaline Co., of Long Island City (of which R. W. Rhodes & Co. are lessees), has published a synopsis of answers to the question "What is Metaline?" It is stated that the substance is a standard material, recognized by mechanical and engineering handbooks, and is a typical solid lubricant, which permits bearings thus fitted to run without any other lubrication. It is composed of metallic oxides and other substances, reduced to an impalpable powder and then solidified in hardened steel molds under great pressure into short length cylinder plugs. The principal features of its applications are effectively illustrated.

"EXTRA SERVICE."

We are in receipt of Nos. 1 and 2 (Vol. 1) of a semi-monthly publication issued by and in the interest of employees of the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin.

This paper is edited by J. H. Dixon and will devote space to news items of interest to its readers, happenings in the various departments of the company's plant, contemplated changes, etc. In the initial number the right is claimed to say, in humorous vein, almost anything, about almost anybody, around the plant. The object of the publication is to establish a feeling of fellowship and foster a spirit of co-operation. That this feeling and spirit are already pretty well established seems evident from the fact of the publication's immediate growth, No. 2 having assumed a size of $6\frac{1}{2} \times 9\frac{1}{4}$ inches, with 14 reading pages, as against the 8-page, $5\frac{1}{2} \times 8\frac{1}{2}$ first number.

The American Insulated Wire & Cable Co., of Chicago, has issued a booklet containing prices of its various lines of weather-proof wires and cables, etc., certain pages of which are devoted to price fluctuations since 1905 and monthly averages in copper prices for the past 30 years. This is a very compact and useful pamphlet, containing beside its 24 pages and cover 8 blank pages for private memoranda.

Catalog M H of the New York Belting & Packing Co., Limited, of 91-93 Chambers street, New York, is devoted to a description of "Magic" hose, one of the many varieties manufactured by this company. Originally intended for garden hose only, this Magic continuous hose—both cover and tube of which are seamless, the latter reinforced with one or more layers of tightly braided yarns with a distinct layer of rubber between braidings—has been adopted for the larger sizes of water hose, as well as for chemical, air drill and pneumatic tool hose, etc. The merits of each of these varieties has been set forth in this catalog, which contains also price lists and telegraph code.

CALENDARS AND SOUVENIRS FOR 1914.

THE TREMENDOUS OUTPUT OF COMMERCIAL CALENDARS.

THE January issue of THE INDIA RUBBER WORLD described a number of calendars issued by different rubber companies, and some calendars received since are described in this issue. Calendars have always been a popular means of advertising with the rubber trade. The statistics for the current year are not available, but in some past years the number of rubber calendars has run into very large figures—the United States Rubber Co. alone sometimes issuing well towards 1,000,000 copies.

Very few people have any conception of the enormous output of commercial calendars. One company alone, the American Lithographic Co.—which has probably printed the largest number of calendars for rubber companies—printed special commercial calendars for 1914 to the number of 14,000,000; and there are other lithograph companies also doing this same sort of work. It is stated by a lithographer in a position to know, that in addition to the special calendars prepared for the larger companies, stock calendars which are sold in smaller quantities to lesser advertisers would amount in value for 1914 to over \$10,000,000. It is quite possible that there are as many commercial calendars printed as there are people in the United States, perhaps more; but even so, the number would not be excessive, for most people want a calendar of some sort in every room in the house, and most business men want a calendar on all the walls of the office, so that whichever way they look they can always see what day it is. The fact that companies that distributed calendars thirty years ago are still distributing them—only in vastly larger quantities—seems to prove that this is a profitable kind of publicity.

"A Monarch of the Hills" is the title of the picture which adorns the calendar of the Derby Rubber Co., rubber reclaimers, of Shelton, Connecticut. This is a reproduction, $11 \times 13\frac{1}{2}$ inches in size, of the painting by Philip R. Goodwin of a far northern scene, in the foreground of which a splendid moose stands, knee deep in a mountain lake, intent,

the apparently calm and untroubled, in all the grandeur of his forest solitude. The water of the lake reflects the golden yellow of the western sky at twilight, and the pine-clad hills of the background are enveloped in that blue haze that heralds the coming of a clear, starry night. This picture, expressive of the majesty of nature, is mounted on a background of black, the body of the card being in light brown with a $\frac{3}{4}$ inch black border; and the hanger as well as the cord that attaches the calendar pad is of green silk.

The J. H. Stedman Co., scrap rubber merchants, of South Braintree, Massachusetts, have sent out a very handsome and useful calendar showing, on a background of white, a photograph, in shades of brown, of the Chain Bridge over the Merrimac at Deer Island—the first suspension bridge ever built in the United States and the second in the world. This is the eighth in a series of New England scenes.

The Essex Rubber Co., Inc., of Trenton, New Jersey—makers of mechanical specialties—have distributed calendars of the lithographed poster variety, in two styles, each 12 inches wide by 17 high and with a calendar part attached to this card, the entire width of the card and 7 inches in length. These advertise in effective manner the "Essex" rubber sole and the "Tred-Lite" rubber heel, one picture showing, in red and green on a tan background, a young woman in tennis costume in the act of replacing her slippers with oxfords of the rubber-soled outing variety, and the other, in black and shades of brown on a green background, showing a young man seated in a chair tilted back at a comfortable angle, in a reflective and contemplative mood—induced probably by the cigar he has been smoking and the ease afforded by his rubber-soled and heeled oxfords. Posters in the same styles are also supplied without the calendar, but with hanger attachment and cardboard support for window or counter display.

The Portage Rubber Co., of Akron, Ohio, have favored their friends with a very chaste and tasteful little desk calendar consisting of a small monthly pad mounted on a standard about 4 inches wide and 4 or 5 inches high, made of solid brass. In some cases they have etched the recipient's name in a little panel left for that purpose at the top of the standard. To many people this personal touch will undoubtedly add to the attractiveness of the calendar.

The Derby Rubber Co., Derby, Connecticut—manufacturers of reclaimed rubber—have distributed a calendar for the month of January in the form of a panel about 5 x 10 inches, the upper half of which is devoted to a scene entitled "In the Northland." The picture lives up to its title, as it is a scene of snowy peaks and general northern cold. A hunter tramps along the foreground on his snowshoes, while a procession of rugged Eskimo dogs pull a sled that presumably carries the camping equipment. The company states that it has twelve of these "Close to Nature" pictures, one for each month.

The North British Rubber Co., Limited—which is generally conceded to be the largest rubber manufacturing company in the British Empire—sends its customers and friends a large wall calendar giving a bird's eye view of its great plant at Edinburgh. At the center of the card is a calendar pad with a leaf for each day and figures of sufficient size to be legible at a very considerable distance.

Elbert O. Jeralds, of 1328 Broadway and 47 West Thirty-fourth street, New York—representative of The Canton Rubber Co. of Canton, Ohio—has supplied the trade with a very dainty little calendar 7 inches wide and 14 inches in height with a $3\frac{1}{2}$ x 8 inch center panel showing, on a dark brown background, a young woman in street costume of tan with brown furs, the touches of red on her green hat and at her throat harmonizing with the charming pink freshness of her cheeks. This panel is mounted

on a gray card which in turn is mounted on white, the calendar part and the ribbon hanger being also in white.

The Electric Hose & Rubber Co. of Wilmington, Delaware, with branches at New York, Philadelphia, Chicago and San Francisco, which makes a specialty of rubber hose, has sent to its friends and customers a desk pad 9 x 5½ inches in size, which combines the offices of calendar and daily memorandum pad.

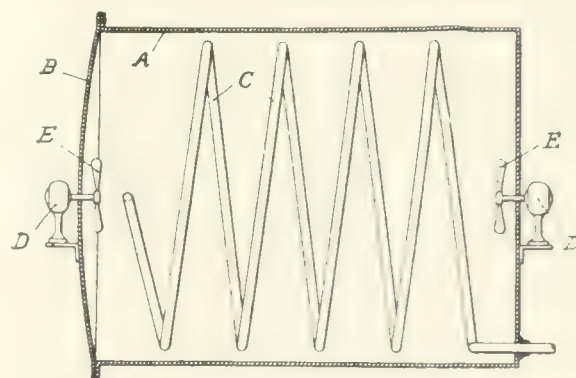
The Dunlop Tire & Rubber Goods Co., Limited, whose head offices and factories are located at Toronto, Ontario, and having branches not only in the east but in many of the principal cities throughout the western provinces, distributed a lithographed wall hanger conveying greetings for Christmas, 1913. This pictures the "shade" of a departed buffalo, which, on viewing the industrial progress of the country in which he once ranged unmolested, exclaims "My, how my trail has changed!"

David Bridge & Co., Limited, manufacturers of rubber machinery, of Castleton, Manchester, England, have sent us an especially handsome and useful pocket diary, bound in brown leather, with divisions in the inside of the cover forming compartments for postage stamps, bills, etc. The book is divided into two parts, one containing a number of pages devoted to general and useful information, calendar and space for daily memoranda, addresses, etc., and the other half of blank pages, the space between being provided with a pocket which contains an unusually attractive little pencil.

"The West India Committee Circular," 15 Seething Lane, London, has forwarded a calendar 9 x 6 inches in size, with a view in colors entitled "The Sunday Market in Antigua."

HOT AIR VULCANIZER.

In the past it has been found difficult to vulcanize rubber by means of hot air on account of the uneven temperature which usually prevails in different parts of the apparatus. The device illustrated in the accompanying drawing, however, is claimed to solve this difficulty and to make vulcanization by means of hot air as efficient as by any other process. The large steel tank *A*



A NEW FRENCH TYPE OF VULCANIZER

is closed at one end and has a hinged door *B* at the other. Inside the tank is a steam coil *C* which is heated from a steam generator on the outside. At each end of the tank is a small electric motor *D* communicating with a fan *E* on the inside. During the entire period of vulcanization the fans are kept in motion in order to stir up the air and maintain an equal temperature in all parts of the tank. The vulcanizer may be made in any shape and size to accommodate tires or smaller rubber articles, while the heating of the interior may be effected by means of coils of any shape, placed spirally or lengthwise. If desired, a steam jacket may be substituted in place of the coils. The fans may be operated by any available source of power through a belt from a line shaft, altho electric motors are preferable for this purpose.

New Rubber Goods in the Market.

LEATHER BOOTS LINED WITH RUBBER.

HERE is something new—at least new to most American readers—in the shape of rubber lined leather footwear. A great many people like to adhere to leather footwear because of its appearance but at the same time, very naturally, want footwear that in bad walking and in driving rains will still enable them to keep dry shod. An English manufacturer seems to have met the situation. Here are three styles of leather footwear, rubberized to the extent of rendering it waterproof. Fig. No. 1 shows a boot intended for fishing or shooting. It is made of strong leather,

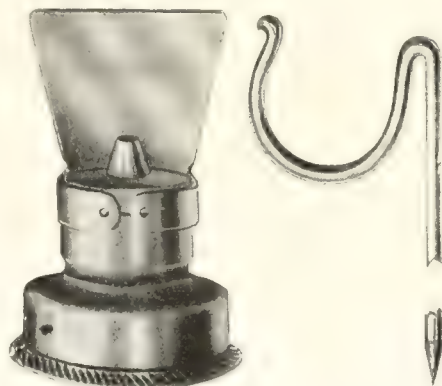


with a lining, and then is coated with a stout layer of rubber, making it possible for the wearer to walk through wet fields all day without any danger of wet feet.

The other two represent a shoe and a boot which are made of leather, lined with leather, but have a thin interlining of rubber, which keeps the wearer dry shod under all conditions. (J. C. Cording & Co., 19 Piccadilly, W., London.)

THE DUO NOZZLE.

A combination hose nozzle and lawn sprinkler of small cost has been placed on the market, under the name of the "Duo" Nozzle. A glance at the illustration will clearly indicate its construction, and how it may be used in either capacity. This device produces a spray after the water has issued from the nozzle, so that the volume of water is not in any way diminished. It also throws both a straight stream and spray without the necessity of a shut-off. The nozzle portion is made of wrought brass, finished inside and out. [The H. B. Sherman Manufacturing Company, Battle Creek, Michigan.]



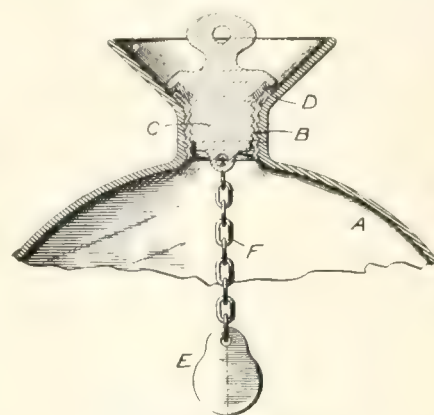
THE HANDMADE CHAMPIONSHIP TENNIS BALL FOR 1914.

While the Hand-Made Championship Tennis Ball made by the Pennsylvania Rubber Co., of Jeannette, Pennsylvania, and first placed on the market some four years ago, has not only been well received, but grown in favor with the trade, investigations of the subject of manufacture with a view to tournament requirements have resulted in evolving a tennis ball for 1914 that is said to possess material advancement in both playing quality and serviceability and that will no doubt further increase the

popularity of this company's product. This new 1914 tennis ball is made on a mould slightly larger than the regulation size, with walls of purest Ceylon rubber, with high-grade rubber veneer interior and is sewn with paraffin-treated thread, entirely overcoming the too frequent tendency of tennis balls to have their seams loosen upon exposure to dampness.

YOU CAN'T LOSE THIS STOPPER.

A great deal of trouble and annoyance is often caused by mislaid stoppers, especially where the stopper is for the hot water bottle, which is usually wanted in a hurry. In the accompanying drawing is shown a hot water bottle fitted with a stopper which cannot become detached from the bottle. Inside the neck of the

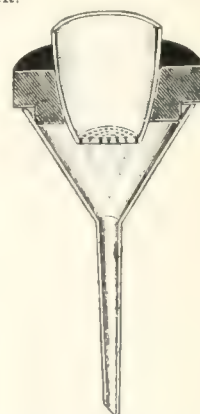


NON-DETACHABLE STOPPER.

bottle *A* is vulcanized a threaded socket *B*, into which the stopper *C* fits. These two parts are double threaded so that it requires only half the usual time for screwing the stopper down against its seat. Another feature lies in the fact that the stopper seats against the top of the socket instead of against a projecting flange at the lower end. This allows a maximum opening for filling the bottle and also forms a funnel-like flare at the top. The stopper is provided with a gasket *D*, which seats against the flange of the socket. The most important feature, however, lies in the fact that the stopper is provided with a retainer *E* attached in a ring at its lower end by means of the chain *F*. This retainer is merely a piece of sheet brass made wider than the diameter of the socket *B* so that the stopper cannot be detached after being unscrewed. The brass retainer is bent in order to allow it to pass into the bottle, after which it is flattened out with a special tool. [Robert J. Wilkie, 18 Tremont street, Boston, Massachusetts.]

A RUBBER CRUCIBLE HOLDER.

The illustration herewith shows Bailey's new crucible holder, which is made of rubber, accommodating a 25 cc. porcelain Gooch crucible. It is made to fit an ordinary 2-inch glass funnel, the upper edge projecting over the edge of the funnel and thus making a tight joint. The lower edge of the holder is beveled and rests against the sides of the funnel, thus increasing the tightness of the joint when suction is used on the funnel. It is said that the holder has met with the approval of practical chemists, as its use obviates the inconvenience incident to the use of the older style of rubber covered glass holders. [Sold by Eimer & Amend, New York City.]



BAILEY'S RUBBER CRUCIBLE HOLDER.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

EVERLASTIK.

The trade mark "Everlastik" has been registered at the United States patent office as the name of a new garter web, and a patent applied for on the exclusive process by which it is made and by reason of which the rubber strands are prevented from slipping back when cut by a needle and leaving the web lifeless. Everlastik is claimed by the manufacturers to retain its elasticity under all conditions and is described by them as "The Garter Web That Outlasts the Corset." In its wider widths it is also used by corset makers for gores, insets, bands, etc., to add to the comfort of the corset. (Hub Gore Makers, Boston, Massachusetts.)

EVERLASTING GAS TUBING.

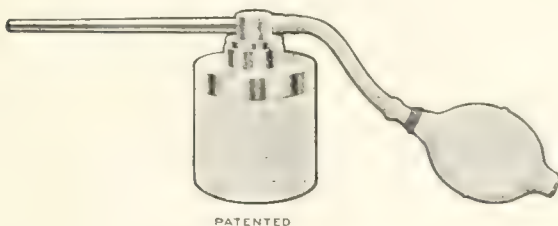
According to an advertisement appearing in a recently issued periodical, patent has been applied for on a gas tubing under the above name. This tubing is put up one piece in a box and is guaranteed in every respect, having been approved on tests made by the Good Housekeeping Laboratory. (The Chicago Tube & Braiding Co., 216 North Clinton street, Chicago, Illinois.)

THE LITTLE RUBBER KEWPIE.

Everyone who loves dolls, either as a memory or because of some little one who loves them, will be glad to know that the "Kewpie," the present fad in dolls, is being made of rubber, and that no longer need young hearts be broken because of broken heads. The rubber Kewpie has a soft, cool, fat little body, just as his originator first saw him in her dreams, and not only will he gracefully and smilingly endure any amount of loving, but will outlive even the most loyal of childish affections. His production in rubber will probably eliminate any malicious tendencies he may have inherited from the real cupid from whom he takes his name, and while his color may be a trifle "off," his charm is none the less appealing. In the past he has been presented only in a standing position, but he is soon to appear seated, with his chin in his hands, and with the same startled coyness of expression. His popularity in rubber and in his new form will probably be as great as that accorded him in bisque and celluloid.

**RUBBER AIDS TO SANITATION AND HEALTH.**

One of the latest practical sanitary inventions placed on the market is the "Multiple" atomizer here illustrated. This is simple in construction and by its use three different fluids may

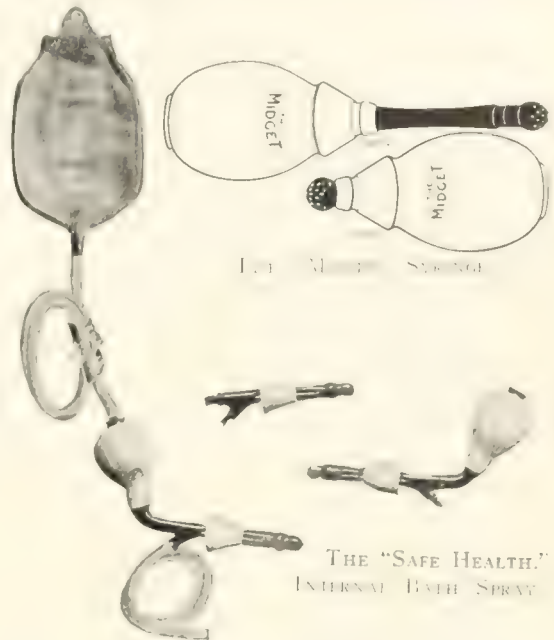


THE "MULTIPLE" ATOMIZER

be sprayed from the same bottle simply by turning the atomizer head around until the rubber bulb here shown comes over the

fluid desired to be sprayed. The convenience of this feature and the saving in time and space are very apparent.

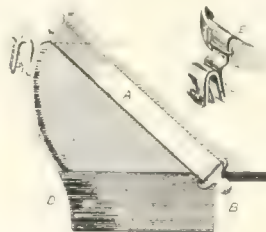
Other recently adopted scientific appliances included in the output of this company are the "Midget" syringe—so called because while of sufficient size for the purpose intended it may



be folded into very small space—and the "Safe Health" internal bath spray combination for private or hospital use, claimed by the company to be the most sanitary device of its kind on the market. The accompanying illustrations show this spray in its various combinations. [Hospital Rubber Co., Attleboro, Massachusetts.]

TO MAKE YOUR RUBBERS STICK.

Everyone has had the experience of having his rubbers pulled off in the middle of a muddy street at the very time when he needed them most. A thoughtful inventor has designed a clamp for preventing this. The device consists of an elastic band *A* passing around the back of the shoe and connected with a rubber-covered wire *B* running across the shoe in front of the heel. In the centre of the band at the back is a clamp *C* by means of which the rubber *D* is held in position. The elastic strap may be made adjustable so as to fit any size of shoe and it is provided with a corrugated rubber strip *E* to assist in keeping the strap from slipping down.



CLAMP TO HOLD YOUR RUBBERS ON.

A NEW MATERIAL FOR WATERPROOF GARMENTS.

A material known as "Escourta," made of a combination of cotton and artificial silk, and proofed by the Cravenette process has been brought out for use in the manufacture of raincoats, the samples shown including a number of black and white checks and mixtures. Coats of this material, in addition to their waterproof qualities, are suitable also for motor and dust coats, the sheen of the silk rendering them particularly attractive in appearance. The manufacture by this company of artificial silk has been developed to the extent that this product is now guaranteed to stand the test of washing, and the belief has been expressed that Escourta will be received with great favor as a raincoat material for both men's and women's wear. (S. Courtauld & Co., Ltd., 354 Fourth avenue, New York.)

Some Rubber Interests in Europe.

SYNTHETIC PRODUCTS CO., LTD.

THE recent meeting of the Synthetic Products Co., London (under the presidency of Mr. P. B. Rackett, chairman of the company), was marked by various interesting statements as to its condition and prospects. It will be recalled that at the time it was started a conservative policy was decided on, and was carried out by the erection of a small plant at Rainham, Kent, where the possibilities of the commercial preparation of acetone and fusel oil were tested.

In the interim report of June 21, 1913, the directors were in a position to state that trials on an extensive basis of acetone and fusel oil, contemplated by the original prospectus, had produced results more satisfactory than had been looked for, fermentation on a large scale taking only one-fourth of the time occupied in trials on a smaller scale. At the same time, they were able to report having leased (with right of extending term to 56 years) dock-side land and premises at King's Lynn, Norfolk. They had also secured a large factory (previously used as an oil mill), which, as well as a number of warehouses, had been equipped for the company's business. So far 24 enameled fermentation tanks, each of 4,000 gallons capacity, have been provided, of which the first six were placed in operation during November last. Thus, within about four months after beginning work, fermentations on a commercial scale were being carried out, with results better than those of laboratory practice; and further important economies are looked for in the future manufacture of acetone and fusel oil.

Among the other advantages of the King's Lynn site is its proximity to the sources of supply of potatoes (largely used in the company's products), mangel wurzel and sugar beets, which are grown in Norfolk. Moreover, the site is remarkably convenient for drawing from the Baltic ports the sawdust which might ultimately be used in the company's processes. It is also a suitable point for exports of the products to be manufactured.

SYNTHETIC RUBBER

A small plant being now in operation, it is expected to produce sufficient rubber for practical tests. So far the quality turned out has been satisfactory. It is hoped to issue by the middle of this year an interim report upon the mechanical tests of synthetic rubber, which are apparently the only ones that manufacturers will consider, good lasting qualities being an essential requirement.

In seconding the adoption of the report, Sir William Ramsay emphasized the policy of the company in testing everything on a small scale before going further, thus saving alterations and consequent expense. He considered it would be inadvisable to put up a large factory, in advance of being certain as to the points before them. A unit has been produced which works well, and it will be multiplied until, say, 60 pounds of rubber a week are produced for testing purposes. Results so far have surpassed expectations.

In reply to a shareholder, the chairman said that about £20,000 would be in hand after erecting the plant at the present works, which would carry on the company for several years.

CRUDE RUBBER WASHING CO., LTD., LONDON.

In addressing the third annual general meeting of the above company, the chairman, Mr. Alfred Armitage, lately stated that in the revaluation of the assets, the freehold property had been written down about 50 per cent. The company had, it found, been infringing certain rubber-washing patents, and under legal advice ceased to do so. A large stock of old rubber had been sold since the last meeting. Other items of assets were in course of liquidation.

Regarding the future prospects of the company, a certain quantity of rubber is being washed and dried but, naturally, without a large profit. A mixing plant has been installed, which is supplying compounds to a good many English motor firms. In furtherance of the policy of manufacturing some finished article, the production of a cab tire was begun, which has been largely taken up for jinrickishas. The report stated that the company, after many vicissitudes, is now starting on a sound business career.

THE FOURTH INTERNATIONAL RUBBER AND ALLIED INDUSTRIES EXHIBITION, LONDON, 1914.

Official recognition has been given the Fourth International Rubber and Allied Industries Exhibition—to be held in London next June—by the Syndicale Chamber of Rubber Manufacturers of Paris, thus completing the list of important associations in all parts of the world in any way connected with the rubber industry that have accorded recognition to this exhibition. This list includes: The Rubber Growers' Association of London; the Planters' Associations of Ceylon, Indo-China, British Malaya, Malacca, Johore, Southern India and Java; the Rubber Association of Holland (Amsterdam); the Commercial Associations of Pará and Amazonas, the Republic of Peru and other producing countries; the Rubber Manufacturers' Associations of France, Germany, Austria and Belgium; the Rubber Club of America and all the important exhibition associations in all parts of the world. Every important producing country is expected to be officially represented at this exhibition.

NEW ENGLISH RUBBER FACTORIES IN 1913.

Among the English factory extensions during 1913 were the new works of the Leyland & Birmingham Co., at Leyland, and additions to the Stirchley plant of the Capon-Heaton Co. An extensive factory is being constructed at Southampton for Messrs. Pirelli & Co., while Rubastic, Ltd., has erected a factory at Southall. A new waterproofing plant has been installed by Messrs. A. O. Ferguson & Co. at Hollinwood, Manchester. Other new factories included the works of T. Dowler & Co., Broadheath; Laughton & Son, Droylsden, and the Swan Rubber Co., Stockport.

NEW SCOTTISH RUBBER COMPANIES.

Five new rubber companies were registered in Scotland during 1913; the total capital being equal to \$642,500. In 1912 ten companies were established, the combined capital of which equalled \$1,592,500.

MR. H. A. SCHMIDT WITH R. HUNTER CRAIG & CO.

Mr. H. A. Schmidt, for many years associated with the firm of A. H. Alden & Co., Limited, has assumed the management of the rubber department of R. Hunter Craig & Co., Limited, whose headquarters are at 7 London street, Mark Lane, London, with branches at Glasgow, Liverpool, Dublin, Belfast and Cork.

REDUCED FREIGHT ON RUBBER.

Advices from London state that the Eastern steamer lines have reduced the freight on plantation rubber from 76s. (\$18.50) to 65s. (\$16.00) per ton of 50 cubic feet; this being the rate from Port Swettenham to London. In connection with the reported intention of the steam companies to improve their Eastern service, further reductions are expected in the immediate future.

C. Hirsch & Co., rubber brokers, of London, E. C., announce a change of address, being now located at 21, Mincing Lane.

The Rubber Growers' Association, of London, announces a change in its address, which is now 38 Eastcheap, London, E. C.

Rubber at the Paris Automobile Salon.

By a Special Correspondent.

WHILE there has undoubtedly been progress of late years in the European tire industry, it must be admitted that such progress has been slow. A good deal still has to be done in that branch of the rubber industry. The aim of

remained in favor, superseding the other more complicated styles.

DECAUVILLE WRAPPING MACHINE

The principal improvement seen at the exhibition has been in connection with the wrapping of tires. It was for a long time customary to vulcanize tires on straight mandrels, and to unite them after vulcanization. This method having been found inconvenient, tires are now made in a number of factories on circular mandrels. This allows of the definite shape they will have when in the tires being obtained during vulcanization.

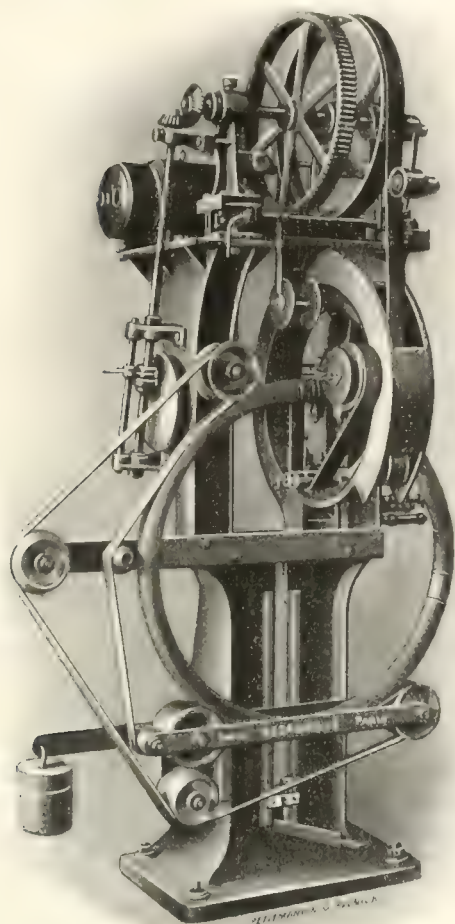
But this operation is not easily performed by hand, and the wrapping of the bands of fabric round the air-chamber is a lengthy process. M. Emil Decauville, a well-known machinist, has elaborated a machine for the mechanical wrapping of these bands, which is said to effect its purpose successfully, and is illustrated herewith. It includes a wheel, cut to allow the passage of the mandrel, and is simple in its operation. The machine is operated by an endless band passing over aluminum guides. A guide likewise regulates the tension of the fabric.

The wheel carrying the bobbin is set in motion by a belt covering five-sixths of its surface, thus giving considerable motive power. A connecting pulley to receive the motion is attached to the machine, which can also be directly driven by an electric motor, as shown in the annexed cut.

It is anticipated that this manufacture of tubes on circular mandrels is an improvement which will be adopted by all makers of pneumatic tires.

MUDGUARDS

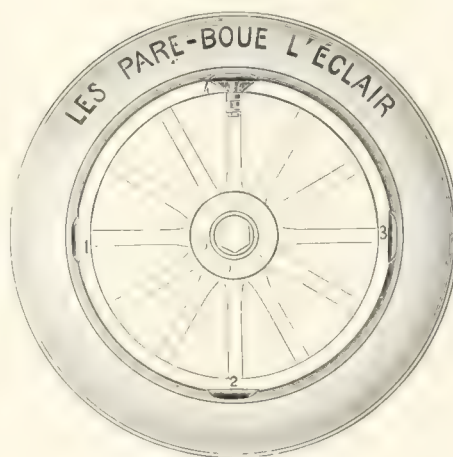
Mudguards first received attention at the Thirteenth Automobile Salon, referred to in the March, 1913, issue of THE INDIA RUBBER WORLD (page 328). As the question continues to be of current interest for rubber manufacturers, some further details are given of the "L'Eclair" system, briefly referred to in the above-named article. This type is said to have given satisfactory results and is represented by cut shown below. The Shield A consists of a circular band of rubber with one or two layers of fabric lining. The attachment-rod B is shown on the side. The movable plates 1, 2, 3 and the extensible plate 4 insure the firm hold of the whole appliance on the rim. This mudguard can be applied equally well to all wheels with wooden or metallic spokes, and likewise to emergency and twin wheels. It can be fitted very



DECAUVILLE WRAPPING MACHINE

inventors was formerly to prevent the bursting and puncturing of tires, in which endeavors they used systems more or less of a complicated and expensive nature. All these inventions and systems have completely disappeared. Today every one understands that the pneumatic tire should be light and, above all, extremely resilient; the latter quality being the principal reason for its existence.

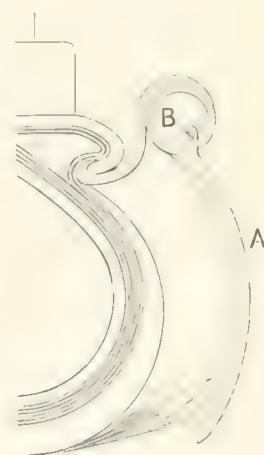
Tires formed the most interesting object as regarded rubber in the Fourteenth Automobile Salon, recently held in Paris, but the exhibits included only standard types of pneumatic tires with anti-skid treads in round or flat outlines, and with steel rivets upon foundations of leather. This style of tire is the most popular in France, being preferred to one entirely of rubber, and being practically free from the risk of punctures, while maintaining a sufficient degree of resiliency. It was brought out in 1907 by Michelin & Co., and has since



L'ECLAIR MUDGUARD.

A = Rubber shield.
B = Attachment rod

1, 2, 3 = Movable plates
4 = Extensible plate



rapidly and without altering the wheels and its merits have been officially recognized in various trial competitions.

Several other mudguards were exhibited, consisting, like that described, of a kind of circular band in rubber or in rubberized fabric, fixed to the wheel in different ways.

THE "KROL" ANTI-SKID

The rapid increase of the conveyance of goods by motor trucks has been followed with interest by rubber manufacturers, who have found in this new form of transport important outlets for rubber tires.

Up to the present, pneumatic tires do not seem to have been employed for relatively heavy vehicles. They are used for light carts, while solid tires are reserved for trucks carrying heavy loads. Certain so-called "heavy load" trucks are still mounted on wheels with steel tires; sometimes bearing hollow impressions to prevent skidding. These trucks have been the cause of numerous complaints, as they make a great noise, damaging the roadway and shaking the houses.

Consequently, the authorities of several large cities have issued ordinances prohibiting the use of "heavy load" trucks for the transport of materials or merchandize, unless the wheels are fitted with rubber shock-absorbing tires, or other tires preventing or materially diminishing vibration.

The question of solid or of cushion tires, already of considerable interest for rubber manufacturers, is likely to become more so, for in a short time all heavy-weight vehicles will have to be fitted with rubber tires.

When these vehicles travel on wet roadways skidding is always to be feared, particularly in starting, turning, or applying brakes; this skidding being dangerous for the drivers, for pedestrians and for other vehicles.

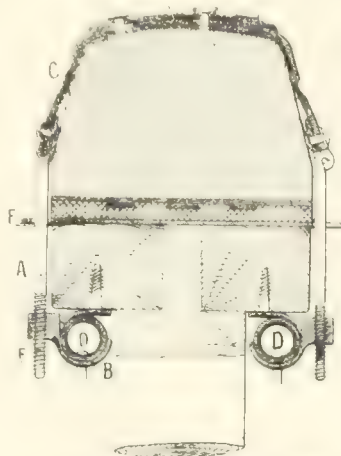
Inventors have been endeavoring to solve this problem of anti-skid tires for motor trucks. These "anti-skids" are usually composed of a band of leather studded with rivets, like those employed for pneumatic tires. These treads are secured directly on the tire, or they are applied to it with fixed or changeable tension.

Up to the present the various systems introduced, with one or two exceptions, have not given very satisfactory results. Attention is claimed, however, for the anti-skid system designed by M. Krol, and exhibited at the Salon, under the name of "Krol Protective Anti-Skid for Heavy Loads, with Resilient and Instantaneous Pneumatic Connections." This very ingenious anti-skid is shown by the above illustration.

The "Krol" protective anti-skid is composed of a band of chrome leather, with steel rivets and a number of attachments with pneumatic tubes and threaded rods in channels.

Rods *A* with their hooks *B* are fastened to the plates of leather *C*, passing through holes previously made in the rim *F*, the two pneumatic tubes *D* being placed in their respective channels, and the hooks resting on the tubes. A few strokes of the pump in the pneumatic tubes will suffice to instantaneously and uniformly produce the anti-skid effect on the tire. The arrangement of the rods, and of the threaded tube *E* allows of an adjustment at long intervals, upon the leather stretching.

The operation of this anti-skid can be easily understood in



THE KROL ANTI SKID FOR
HEAVY LOADS

its entirety; the pressure of the air in the pneumatic tubes ensuring the tension of the rods and of the leather on the tire. This air pressure in the tubes is uniform and constant at all points. It therefore follows that the tension of the anti-skid on the tire is likewise uniform and constant in all its parts; not only when at rest but also whatever may be the deformations of the tire when in operation. As may be easily seen from the above description, the anti-skid, while independent of the tire, has a continuous pneumatic connection with it.

It is needless to here describe the protective anti-skids for pneumatic or solid tires, attached to the rims by hooks or like systems. These are too well known and, besides, are disappearing.

A NEW FRENCH LIFE PRESERVER.

A life preserver which has been invented by Mr. Allain Redou, employed in the merchant marine service at Havre, is described by Consul John Ball Osborne, stationed at that city, as "possessing marked advantages over the type now in use." This life jacket is designed in form and material like an ordinary vest, and a leather belt is attached to insure its remaining in correct position. The vest is provided with inflatable rubber-lined crowns or "water wings," of the same material as the garment itself, these passing under the arms, sufficiently low not to interfere with the movements of the wearer, and resting on the shoulders. When not in use these wings are deflated and may be kept in place, close to the vest, by means of clips. To each crown or wing is attached a rubber tube with pneumatic valve, which provides for quick inflation by simply blowing in the tube. The apparatus weighs less than 2 pounds and is said to be capable when inflated of sustaining a weight of about 37 pounds of iron—more than twice the sustaining capacity of the ordinary life preserver. Demonstrations have been made in the presence of officials of the port of Havre, the demonstrator being able to put on the vest and adjust and inflate the wings in 1 minute and 27 seconds. This new life preserver is not yet on the market.

ITALY STILL BUILDING DIRIGIBLES.

Notwithstanding the appalling disasters that have overtaken German dirigibles, Italy is reported as still going forward in the construction of these great airships, being convinced from her experiences in the war with Tripoli that they can be made most serviceable in time of need. These new war balloons have some novel features, one of them having a gun platform on the top with a special machine gun for defense against other airships.

The Italians are at the same time devoting a good deal of attention to the best means of destroying the dirigibles of the enemy. Where an airship is built with many compartments a shell can pass through one compartment without seriously damaging the structure as a whole, but it is reported that the Italians have invented a shell of such a character that when it penetrates a balloon a certain oxygen content is released and the mixture of oxygen and hydrogen exploded by the heat of a percussion cap that is raised to a high temperature by the hydrogen, the explosion shattering the entire balloon.

INSCRIPTION SALES.

With a view to investigating the system of "inscription sales" (described in the January INDIA RUBBER WORLD, page 186) a deputation consisting of brokers, merchants and other representatives of the rubber trade, attended the December inscription sales at Antwerp. In the opinion of the Antwerp houses familiar with both markets, this system would not prove effective in London without a close combination of the whole of the London interests and the complete stoppage of all private transactions in rubber. It is a part of the Antwerp system for all rubber to pass through the monthly inscription sales, between which no rubber changes hands.

THE STANDARDIZATION COMMITTEE'S REPORT.

IT will be recalled that at an extraordinary general meeting of the Rubber Growers' Association, held in London on July 21 last, a committee was appointed for the consideration of a project for a more accurate system of the standardization and valuation of plantation rubber. The report of this committee, submitted in December to the council of the association, advocates the introduction of a testing system which would clearly indicate quality to the buyer and value to the seller, further proposing that a central testing station be rented where examinations could be made and certificates of quality issued corresponding to every half ton of rubber delivered; samples of the rubber to be vulcanized under certain standard conditions and tests applied to the vulcanized material, on the basis of which certificates would be issued—these tests to be made, if necessary, within two days of delivery of samples. In conjunction with this testing station the report suggests also the erection of an experimental factory, the principal objects of which would be: To advise regarding the best type of plantation rubber to be used for specific purposes and best method of use; to advise regarding mixings, processes, etc., in respect to which manufacturers may ask for assistance; experimental work, with a view to determining new uses for plantation rubber, and to provide the organization for bringing before the trade the results of work done, new methods and uses, etc.

Among the principal reasons for the appointment of the committee was the known fact that considerable variation occurs in plantation rubber, which has depressed prices. Greater uniformity in preparation would, however, only provide insufficient remedy for this defect, which calls for some guarantee of quality. The committee is of the opinion that most of the other grades on the market could not successfully compete with plantation rubber sold under a guarantee.

The tests decided upon as a basis for the system of valuation were suggested by Dr. Philip Schidrowitz and have been endorsed as practical and scientifically sound by technologists, manufacturers and buyers, it being agreed that a true value and practical standard of quality can be ascertained by determining the vulcanizing capacity and by tests of the vulcanized product determining tensile properties, physical condition and stability. While it is admitted that for different manufacturing purposes rubbers of specific qualities are required, it has further been agreed that general commercial quality can be represented by an index figure covering the three attributes mentioned above, provided that, as is intended, the rate of cure, compared with a certain standard, be also given. The manufacturer will thus be enabled to select the exact grade suited to his purpose.

It is suggested to sub-divide all crude rubbers of various grades on the basis of index figures of quality. For instance, all rubbers showing an index figure of

900 and over being	1st grade.
800 to 900	" 2nd "
700 to 800	" 3rd "
600 to 700	" 4th "
500 to 600	" 5th "

(No. 1,000 would correspond with a plantation rubber of high quality.)

Some little time would necessarily elapse before manufacturers would learn the application of the index figures to practical work, but it is anticipated that no ultimate difficulty would arise under this head.

The report includes an estimate of the investment and annual expenditure required to carry out this scheme, based both on a testing station only and a testing station and factory combined as well as on quantities of 10, 20 and 30 thousand tons, and in all cases is shown as only a very small fraction of a penny per pound on the rubber to be tested. The recommendation is made

that a limited liability company be formed with a nominal capital of £50,000 to carry on this work and that the shares in this company be divided among the participating plantation concerns.

The publication of the committee's report marks a distinct advance in the solution of the question of standardization. In accordance with the recommendations of the committee the report has been sent to plantation companies; consequently it rests with them to decide whether they are prepared to guarantee their rubber at a slight expense.

FEDERATED MALAY STATES AND STANDARDIZATION

In his recent opening address to the Federal Council of the Malay States, Sir Arthur Young, the High Commissioner, referred to the increase in 1913 of the acreage alienated for planting purposes to 83,900 acres, as compared with 61,300 for the corresponding period of 1912. He added: "There is no halt in our progress in spite of the long-expected fall in the price of rubber. . . . It will not be an unmixed evil if it enforces sounder and more economical methods of production. The low price of plantation rubber may also encourage its more extended use, in place of inferior substitutes or poor imitations of the genuine product.

"The necessity of standardizing Pará rubber for export from the Malay States is engaging the attention of the British authorities, who are increasing the chemical staff of the Agricultural Department with a view to the investigations being made as thorough as possible."

RUBBER TESTING AT GROSS LICHTERFELDE.

ACCORDING to the report of the Royal Material Testing Bureau, Gross Lichterfelde, for the business year from April, 1912, to March, 1913, the testing of rubber, which was first undertaken in 1909, was carried on to an increased extent during the year under review. This result was facilitated by the acquisition of a suitable calender for the laboratory and the completion of the previous equipment of washing, mixing and vulcanizing machinery. The bureau is now in a position to make tests of the influence of various conditions of vulcanization on the strength of rubber.

Interviews took place with various officials from the German colonies interested in rubber, and, as requested, a large number of German rubber factories supplied the bureau free with the necessary material for mechanical tests of as many commercial qualities of rubber as possible. The object in view was such alteration or extension of existing processes as might be found necessary.

During the year an increased number of appliances for the testing of balloon materials were used, particularly for diffusion of gas. Other tests were carried out for the description of fiber, strength and resistance to weather, sun light and damp. Others were made of metallized fabrics, as to their weather resisting qualities, resistance to breaking and bursting, and penetrability to gas.

In conjunction with the German Association of Electrical Engineers and representatives of the Insulated Wire Factories, the bureau elaborated new and simplified methods of testing electric wire. The control of the rubber covering of interior wiring was undertaken, in conjunction with the United Insulated Wire Factories. Not only were samples of the finished product tested, but samples were also received for testing India rubber in the mass intended for use in cable covering.

Among the treatises published were those of F. W. Hinrichsen and E. Kindscher on the "Theory of Vulcanization" and "Studies on Rubber Analysis."

Several important rubber factories in Germany and elsewhere were visited by representatives of the bureau. Among these were the Diamond Rubber Co.'s works at Akron.

A GERMAN MANUFACTURER ON RUBBER CONSUMPTION.

ONE of the most interesting features of the recent rubber conference of the Colonial Economic Committee, held at Berlin, was the address of Kommerzienrat L. Hoff on the development of rubber consumption. While no ideas were advanced by Herr Hoff that have not been fairly well canvassed by American manufacturers, still his opinions are of interest, because they show what German manufacturers are discussing; and they carry additional weight by reason of the fact that he is at the head of the Harburg-Vienna Rubber Co. and is also president of the German Rubber Manufacturers' Association.

He began by introducing a statistical table giving the comparison of the world's consumption and production of rubber, with stocks on hand, for the years 1909-1912. These statistics are as follows:

	World's Consumption. Tons	World's Production. Tons	World's Stocks. Tons
1909-10	76,026	76,558	6,998
1910/11	74,082	79,305	12,563
1911/12	99,564	93,669	10,181

These figures show an increased consumption of about one-third in 1911-12, as compared with 1910-11, thus justifying the speaker's prediction made in 1911, that the rubber market would be capable of absorbing the gradually increasing production. In fact, consumption had more than kept pace with output. This result had been achieved in spite of the over-production and consequent depression in the American market for manufactured rubber goods.

RECLAIMED RUBBER

According to Herr Hoff's estimate the consumption of reclaimed rubber is double that of the natural product. In other words, if the annual consumption of crude rubber be taken as 100,000 tons, that of reclaimed rubber would represent 200,000 tons. Prices of the latter have not given way and those of scrap only to a slight extent; the purchasing capacity of consumers being thus indicated. The question arises, if the existing low prices for rubber continue, whether it will pay to reclaim scrap for present uses. New uses would, however, be probably found for the product recovered from the scrap which would thus accumulate.

RUBBER WEARING APPAREL

One of the most important outlets for rubber is in the manufacture of wearing apparel, and this branch, in Herr Hoff's opinion, is susceptible of great development. Rubber wearing apparel is no longer a luxury, but a necessity for the health of every individual. As soon as it can be produced at a sufficiently low price, a largely increased demand is assured for it.

RUBBER FOOTWEAR.

The use of rubber footwear, the speaker urged, could be largely extended if the price were reduced to such an extent as to render it an article which every one, rich or poor, would be enabled to wear in the interest of personal health.

RUBBER HEELS AND SOLES

It has been found that the enormous demand which has grown up during late years for rubber heels is not due alone to the intrinsic merits of the article, but also to the enormous advance in the prices of leather. Should the latter condition be maintained, there is little doubt that shoe manufacturers will soon adopt rubber soles, which in durability will be found to at least equal leather soles.

RUBBER SPONGES

Another staple article which, in consequence of the advanced price of the natural product, offers a wide field to rubber, is the sponge. The quality of the natural article is going down and it is being produced in constantly diminish-

ing quantities, but is being fully replaced by the rubber sponge. Besides its other advantages, the latter article is easily sterilized, and can be delivered in any degree of hardness or softness which may be desired, as well as in any sizes that may be called for. It is of equal durability with natural sponge and costs about the same price. If it were possible to reduce the cost of rubber sponges, a notable increase might be anticipated in their use.

SPORTING GOODS

In Herr Hoff's opinion rubber footballs, tennis balls and golf balls could be sold on a much larger scale at the lower prices which cheap rubber would render possible.

FLOORINGS

An opportunity is afforded for cheap rubber in matting, floor-covering and artificial leather, while rubber mosaic flooring is in a position to compete with tiled flooring, particularly if rubber prices keep low.

PAVING

Cheap rubber would be ideal for paving purposes, and would afford an outlet for large quantities of waste rubber, besides doing away with noise in locations where quiet is required. It is, moreover, particularly beneficial to horses' hoofs.

OUTDOOR OFFICIALS' APPAREL.

In the course of the meeting a recommendation was adopted calling the attention of the German Imperial Government to the advantages of waterproof clothing for soldiers, sailors, gendarmes and other officials whose duties are likely to expose them to the weather. The recommendation included a statement to the effect that increased production had so reduced the price of rubber that it is now available in the manufacture of soldiers' cloaks, knapsack covers and certain parts of tents, in competition with the materials hitherto employed for those purposes.

ELASTOZON.

Advices from Lindstedt, Gardelegen, Germany, report the registration of the Elastozon Works, Ltd., for the acquisition and exploitation of the patent and other rights of Herr Hans Knoll, with respect to the rubber substitute "Elastozon." The capital equals \$2,000.

REORGANIZATION OF A GERMAN RUBBER MANUFACTURING COMPANY.

The firm of Martin Merkel, Hamburg, has been reorganized under the style of the Martin Merkel Asbestos & Rubber Manufacturing Co., Ltd., with a capital equaling \$75,000. Its products include steam packings, insulating materials and technical lubricants.

IMPROVEMENT IN RUBBER MATS.

An improvement in rubber mats is reported from Germany, in the form of a mat composed of discs of rubber stamped out with a die and connected by rods of galvanized iron wire. For the purpose of strengthening the mat, discs of vulcan fiber are inserted at intervals. This mat can be easily rolled up and transported whole. Cleaning is effected by a simple washing. The special construction of the mat reduces the wear to a minimum, so that it is claimed to be indestructible. If so desired it can be finished off with brass edges. It is made by Franz Krüger, Kaiserstrasse 33, Saarbrücken, Germany.

RUBBER IN DOG KENNELS.

Rubber has proved such a benefit to humanity that its adoption for the comfort of animals is perhaps a natural consequence. Hence there is possibly nothing unreasonable in the advice of a German publication to rubber goods dealers to watch the requirements of dog kennel proprietors. These requirements include rubber sheeting and mats, as well as items connected with drainage, not to mention rubber clothing for the dogs on rainy days.

RUBBER NOTES FROM JAPAN.

By a Resident Correspondent.

RECLAIMED RUBBER IN JAPAN.

OFFICIAL statistics for the years 1911 and 1912 show a almost five-fold increase in the quantity of reclaimed rubber imported by Japan during the later year, the totals having been: 1911, 141,268 pounds, value \$23,779; 1912, 663,536 pounds, value \$112,490. This increase is attributed to the greater attention paid to reclaimed rubber by Japanese manufacturers since the visit to this country in the spring of 1912 of Mr. Ernest E. Buckleton, general manager of the Northwestern Rubber Co., Litherland, Liverpool, for the purpose of developing relations with our largest companies.

Twenty years ago Japanese rubber manufacturers were unacquainted with the use of old or waste rubber, and this was thrown into rivers and watercourses; but with the increasing number of waste dealers in Japan waste rubber acquired a commercial value, the dealers buying it for 30 or 35 cents per 100 pounds and selling it to manufacturers at \$3 to \$5 for the same quantity, thus making an enormous profit. Within the last ten years the manufacture of old rubber has become more and more familiar to the rubber goods makers. Its advantages have been, however, chiefly recognized for the production of low grades and its use has continued up to the present in a greater or less proportion in cheaper qualities, the principal exception being its employment for insulation of electric wire. Annual consumption of old rubber is about four million pounds—value \$200,000.

As shown by the above statistics, the year 1912 witnessed a marked increase of demand for imported reclaimed rubber, its merits being appreciated for use in superior classes of goods, for which grades alone its price renders it available. It will not answer for common grades, for which the Japanese article is used. Two of the large insulated wire manufacturing companies have tried the latter variety—unsuccessfully—and have returned to the use of imported reclaimed rubber. The outlook for the shipment to Japan of reclaimed rubber is promising, as there are at present no Japanese factories engaged in the work of high grade reclaiming, and the consumption of these grades is not sufficiently large to warrant the installation of works for their production in Japan. The duty on reclaimed rubber is 20 per cent. ad valorem, but efforts are being made to effect a reduction to 10 per cent. It is understood that this subject will engage the attention of the government at the coming diet.

It will be gratifying to note by the following table the United States occupying the leading position for the year 1912 in Japanese imports of Reclaimed Rubber:

	Pounds.	Value.
United States.....	376,528	\$69,953
Great Britain.....	249,628	37,305
Germany	37,325	5,214
France	55	18

Total	663,536	\$112,490
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EXPORTS OF JAPANESE RUBBER MANUFACTURES

The question of exporting Japanese rubber manufactures is receiving attention in connection with prospective augmented imports of reclaimed rubber, by reason of the cheap labor available in Japan. Besides the European and American markets, China offers exceptional opportunities for such trade, which has already been inaugurated by shipments of electric wire and other rubber goods. Owing to its relative proximity to Japan, China is the natural market for the production of this country. Japanese labor, with imported reclaimed rubber, would make a strong combination in competition for the world's trade.

JAPANESE CRUDE RUBBER IMPORTS.

The official figures for the first nine months of the years 1911 to 1913 are:

	Pounds.	Value.
1911.....	1,547,306	\$1,177,795
1912.....	1,431,241	1,097,171
1913.....	1,964,493	1,377,440

The figures for the first nine months of 1913 for the respective countries of supply were as follows:

	Pounds.	Value.
Straits Settlements.....	1,111,623	657,396
Great Britain.....	402,946	378,230
British India.....	215,212	154,976
United States.....	136,296	98,245
Dutch India.....	13,928	8,908
Other countries.....	84,488	79,685
Total	1,964,493	\$1,377,440

HIGHEST AND LOWEST PRICES IN JAPAN, PER POUND, LATE
(Converted into American currency.)

	Highest.	Lowest.
Upriver Fine Pará.....	March 27 \$1.39	November 7 \$1.10
Pará sheet.....	April 16 1.26	November 4 1.00
Borneo No. 1.....	April 2 0.88	November 4 0.70

Japan is thus closely following fluctuations in rubber prices, with a view to profiting by the movements of the market.

LARGE EXPORTS OF RUBBER WASTE FROM SCANDINAVIA TO THE UNITED STATES.

A resident of Denmark, who has been long in the rubber reclaiming business and who frequently sends this publication interesting rubber information, has compiled statistics showing the export to all countries, and separately to the United States, of rubber waste from Norway, Sweden and Denmark during the last few years. His figures show that a very large percentage of these exports come to this country, but, large as they are, the figures do not indicate the entire receipts in the United States from this source, as quite a good many of the lots exported to England and Germany later find their way to American ports. The figures are as follows:

In 1912 Norway exported 585,816 pounds of rubber waste, of which 480,568 pounds came direct to the United States. The total exports of rubber waste from Sweden in 1910 and 1911 amounted to 2,987,468 pounds, 1,947,864 pounds coming to the United States. The waste rubber exports from Denmark for the three years 1911-12-13 amounted to 1,966,360 pounds, 544,060 pounds being shipped direct to America. In other words, over 80 per cent. of the shipments from Norway, about 65 per cent. of the exports from Sweden, and nearly 30 per cent. of the exports from Denmark were shipped direct to this country.

AUSTRIAN PRIZE FOR TRUCK TIRE.

The Austrian Ministry of War has offered a prize equaling \$10,000 for the construction under prescribed conditions of an elastic tire for motor freight trucks. In addition to the specific attributes of pure rubber it must possess essentially greater durability, or, with equal durability, must have the advantage of a smaller cost of construction; thus reducing the expense of operation. It must, however, not weigh more than the pure rubber tire.

Competitors must send in a model of the tire in natural or reduced size, with drawing and description, to reach the Automobil Versuchs-Abteilung (Automobile Trial Division) VI Gumpendorferstrasse 1, Vienna, Austria, not later than June 30 next.

NETHERLANDS INDIES RUBBER GROWERS' ASSOCIATION.

At a meeting recently held at the Hague, under the presidency of Mr. A. G. N. Swart, it was decided to establish an "International Association for the Cultivation of Rubber in the Netherlands East Indies."

The following members represent the various countries on the Council:

Great Britain—Arthur Lampard, Herbert Wright, W. Norfolk, Noel Bingley; Belgium—E. Bunge, F. Osterrieth, A. Hallet; France—Jacques Bernard, Charles Engeringh; Germany—C. A. Erhardt; Holland—J. F. de Beaufort, Dr. A. H. Berthout, P. J. J. Jonas Van's Heer Arendskerke, Professor G. Van Iterson, F. Koch, Jr., Jacob Musly, Abraham Müller, Professor F. Van Romburgh, M. Sanders, J. A. Ruys and J. Van Vollenhoven.

The Rubber Growers' Association of London will add four members as soon as the articles of association are definitely agreed upon.

In his opening address Mr. Swart dwelt on the advantages to



A. G. N. SWART.

be anticipated from the co-operation of the various groups engaged in rubber growing in the Dutch Indies. On account of the enormous amount of foreign capital invested, the cultivation of rubber is an international undertaking. The total capital now invested in this cultivation in the Dutch Indies equals about \$100,000,000, distributed approximately as follows:

English	\$58,000,000
Dutch	17,000,000
Franco-Belgian	16,000,000
American	7,000,000
German	2,000,000
Total	\$100,000,000

Mr. Swart likewise emphasized the fact that the rubber plantation industry was about to enter a period when it would have to fight with all its strength against that of collecting wild rubber. The proposed association, he added, would have a vast field of activity in which it could serve both the rubber trade in general and its members in particular. He likewise referred to the question of a demarcation of the rights and duties of free laborers, and to the importance of legislative protection for the members of the association from the appropriation by the natives of the harvested products of the plantations.

Other points claiming the attention of the association were the cost of production and transport of prepared rubber, as well as the reorganization of the present system of the public sale of plantation rubber. In the speaker's opinion, however, the most interesting task before the association would be the search for new outlets, to absorb the increased supplies of rubber coming forward. The solution of this problem would, he added, decide the future of the rubber industry.

While the other planters' associations existing in Europe had exercised beneficent influence upon the cultivation of rubber in the Dutch colonies, they had likewise other interests at heart, not always consonant with those of the planters of the Netherlands East Indies. This fact had led to the establishment of the new association.

INTERNATIONAL AGRICULTURAL CONFERENCE.

The French International Association for Colonial and Tropical Agronomy, in connection with its British Section, has organized an international conference, to be held next June at the Imperial Institute, London.

Papers will be submitted on such subjects as: "Technical Education and Research in Tropical Agriculture," "Scientific Problems of Rubber Production" and "Agricultural Credit Banks."

While arrangements are so far necessarily incomplete, it is anticipated that the conference will prove a most important event, so far as the tropics are concerned. West Africa will be represented, official representatives having already been appointed for Northern and Southern Nigeria, Sierra Leone and the Gold Coast. Owing to the London exhibition taking place during the month of June, the attendance of a large number of rubber experts is looked for at this international conference.

WHAT IS THE MATTER WITH RUBBER?

I see no occasion to blubber,
Whatever the croakers may say;
But what is the matter with Rubber?
Is all I am asking today.

I've questioned first one and then t'other,
But nobody seems to explain;
They look and say, "Ask me another,"
Or something as vague and inane.

I want to be clearly instructed
In matters just wherefore and why;
To know how the thing is conducted
By those who control and supply.

I want to be really enlightened;
The darkness is hateful to me;
It's not that I'm anyway frightened—
Oh, no! it were foolish to be.

But what is the matter with Rubber?
It used to be ever so strong;
And now, says the keen money-grubber,
It's hardly the price of a song.

There must be a reason for all things.
Whenever those things go amiss;
I've dabbled in great and in small things,
But ne'er met a puzzle like this.

I see no occasion to blubber
Whatever the croakers may say;
But what is the matter with Rubber?
Is all I am asking today.
—Fred. Wallis, in the London "Financial Times."

VALLAMBROSA RUBBER CO., LTD.

Reports for the eight months ending November 30, 1913, show yields on the Vallambrosa Estate of 300,000 pounds, and on the Bukit Kraiong Estate of 76,200 pounds. The outputs for the corresponding period of 1912 were, respectively, 284,100 and 47,100 pounds.

Some Rubber Planting Notes.

CEYLON'S CULTIVATED AREA.

IN an interesting article the "Ceylon Observer" has shown the comparative acreage under cultivation in Ceylon in December, 1911, and October, 1913. The results when tabulated are as follows:

	December 1911	October 1913
	Acres	Acres
Rubber	215,000	240,500
Tea	395,000	399,500
Cacao	32,000	28,000
Cardamoms	7,300	7,000
Total	649,300	675,000

During the period of 20 months covered by the above returns, the number of properties increased from 2,144 to 2,197.

The acreage under rubber for the five principal districts is shown as follows for 1913:

	Rubber Alone Acres	Rubber and Tea Acres
Kalutara	41,572	10,380
Kelani Valley	38,343	25,177
Ratnapura	22,503	3,712
Kegalla	13,985	2,726
Galle	13,934	4,574
Total	130,337	46,569

Thus in the five principal districts, there is under rubber alone about one-half the total rubber acreage, an additional quantity as shown, of "rubber-cum-tea."

In 1878, it was estimated that the maximum area of Ceylon plantations (then chiefly coffee) had been attained with 275,000 acres. Within 35 years the cultivated area has increased to 1,033,854 acres in its full extent; of which 675,000 acres are under the four principal branches of the plantation industry, as shown in the first of the above tables.

COST OF PLANTATION RUBBER PRODUCTION.

One of the most interesting features of Grenier's "Rubber Annual for 1913" is a comparative calculation of the cost of rubber production at four leading points of the Middle East; supplemented by the freight to Europe and selling charges. These two items constitute the "all in" or inclusive cost delivered in Europe.

The figures are as follows, with their American equivalents:

	Ceylon.	Malaya.	Sumatra.	Java.
Eastern cost, free on board.....	8 <i>l.</i> (16 cents)	1 <i>s.</i> (24 cents)	10 <i>d.</i> (20 cents)	1 <i>s.</i> 2 <i>d.</i> (28 cents)
Freight to Europe and sale charges.....	2 <i>l.</i> 4 <i>s.</i> (4½ cents)	2 <i>l.</i> 4 <i>s.</i> (4½ cents)	2½ <i>d.</i> (5 cents)	2½ <i>l.</i> (5 cents)
Total inclusive cost in London.....	10½ <i>d.</i> (20½ cents)	1 <i>s.</i> 2½ <i>d.</i> (28½ cents)	12½ <i>d.</i> (25 cents)	1 <i>s.</i> 4½ <i>d.</i> (33 cents)

These figures, it will be recalled, are the actual outlays at the various stages, but include no profits. The freight and sale charges being about uniform, the differences in cost arise from variations at the points of production.

Any profits have to be made on the basis of the above actual costs at the various stages. These figures, it is added, coincide with the general average as estimated by the Akers Commission of a shilling per pound as actual cost of plantation rubber.

THE PROPOSED COLLEGE OF TROPICAL AGRICULTURE.

It will be recalled that the various projects for the establishment of a College of Tropical Agriculture culminated in the formation of a general committee in London, under the presidency of Sir Henry McCallum (late governor of Ceylon). This committee has been endeavoring to obtain the support of the planting and commercial interests in England, and has made such progress that it is hoped to give effect to the project during the course of 1914.

An opportunity of furthering the scheme is afforded by the visit to Ceylon of Professor Wyndham Dunstan, of the Imperial Institute, London, who was to visit that island in January. Professor Dunstan will represent the London committee and will confer with the Ceylon Board of Agriculture as well as the Planters' Association with reference to the college.

LONDON ASIATIC RUBBER AND PRODUCE COMPANY, LTD. (FEDERATED MALAY STATES)

From a cultivated area of 4,342 acres out of its total holdings of 6,747 acres, this company produced in 1913 approximately 1,001,517 pounds of rubber. The total production during 1912 was 706,942 pounds. The price realized in 1913 averaged 3*s.* 0.59*d.* per pound, while 468,160 pounds have been sold for 1914 at an average gross price of 2*s.* 6.54*d.* per pound.

UNITED SERDANG (SUMATRA) RUBBER PLANTATIONS.

According to the directors' report prepared for submission at the meeting of the above company on December 18 the output had more than doubled in the past business year ending August 31, 1913, having amounted to 1,185,234 pounds, against a total for the preceding annual period of 534,979 pounds. The crop realized an average of 3*s.* 6.67*d.* per pound, while the cost including all expenses had been 1*s.* 7.95*d.* per pound.

The estimated quantity for the current year is 1,720,000 pounds and the estimated cost is 11.19 pence, free on board, exclusive of depreciation, bonuses to staff and coolie engagement expenses.

Further particulars given show that the total area of the estates is 17,974 acres, of which 9,493½ acres are planted. The crop for the year under report was harvested from an average area of 3,589 acres which had reached the bearing stage.

In addition to an interim dividend of 15 per cent. a final dividend for the year of 20 per cent. was recommended by the directors.

TANDJONG RUBBER CO., LTD. (SUMATRA).

Of the total of 9,733½ acres owned by this company, 4,439 acres are under cultivation, which produced in the last six months of 1913 about 264,822 pounds, against 81,917 pounds for the corresponding period of last year.

PATALING RUBBER ESTATES SYNDICATE, LTD. (FEDERATED MALAY STATES).

This company has a total cultivated area of 2,025 acres, of which 1,422 acres are under cultivation. For 1913 the crop was 484,132 pounds, against 429,547 pounds in 1912.

TAPPING RESULTS IN BRITISH GUIANA.

THE manager of "The Hills" plantation on the Mazaruni River, British Guiana, recently sent a report to the directors of that company resident in this country covering the results of tapping experiments made on *Hevea* trees of various ages on the plantation. His report, in part, reads as follows:

"On May 13th of this year, we started to tap 32 trees,



NURSERY WITH OVER 60,000 SEEDLINGS. RIVER MAZARUNI AND MANAGER'S HILL IN THE BACKGROUND.

which had reached exactly four years and three months in age, all of which were 18 inches or more in circumference three feet from the ground, and each tree has been tapped with a single V (started at 18 inches from the ground) for the past six months up to the 12th of November. At the commencement of tapping we tapped six days per week, but found that it would be better to tap seven days, as after the rest of 48 hours we always found that we had a reduction in



FIELD OF 2 1/2 YEAR OLD RUBBER TREES. SHOWING THE COVER CROP OF CREEPERS ON THE GROUND.

the quantity of latex, so that from the end of the second month we have tapped each tree seven days each week."

"Here are the results:

	Biscuits Drams	Scrap Drams	Total Drams
First month.....	739	129	868
Second month.....	950	120	1,070
Third month.....	848	151	999
Fourth month.....	1,280	130	1,410
Fifth month.....	2,017	196	2,213
Sixth month.....	1,982	169	2,151
Total for 6 months	7,816	895	8,711, or 34 lbs. 7 drams

"On the average, during the six months these trees have been tapped, we have produced just over one pound 1 ounce per tree."



AVENUE OF 3 YEAR OLD RUBBER TREES.

He also gives the rainfall for five years—from September 1, 1908, to August 31, 1913—showing a total rainfall for that time of 515.3 inches, as follows: First year, 110.3 inches; second year, 111 inches; third year, 110.5 inches; fourth year 87.6 inches; fifth year, 95.9 inches.

The total number of wet days during these five years was 1,311, against 515 dry days. Only six times in the five years was there a longer period of dry weather than seven days. During 1911 and 1912 there was a severe drought in the



TREES 4 YEARS AND 9 MONTHS OLD, WITH AN AVERAGE YIELD OF 17 OUNCES OF DRY RUBBER IN 6 MONTHS.

colony, the worst for fifty years, and during that drought there were three dry periods, one of ten days, one of fifteen days and one of eighteen days.

The accepted authority on South American rubber "The Rubber Country of the Amazon," by Henry C. Pearson.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED DECEMBER 9, 1913.

- N**O. 1,079,979. Tire preserving compound. S. R. Bail, Export, Ind.
1,079,981. Microphone. J. J. Comer, assignor to Automatic Transcription Co., both of Chicago, Ill.
1,079,965. Tire cage. J. F. Waters, Kansas City, Mo.
1,080,004. Wheel for road vehicles. W. D. Jones, London, England.
1,080,054. Armored tire for trucks. P. Gauthier, Lowell, Mass.
1,080,070. Nursing bottle. J. Mandelberg, assignor to The Santee Nursing Bottle Co.—both of Columbus, Ohio.
1,080,106. Spring and pneumatic wheel. J. A. Gray, Norwalk, Conn.
1,080,128. Vehicle wheel. J. J. Van Heestine, Kansas City, Mo.
1,080,129. Spring tire for wheels of vehicles. C. H. Vidal, Warwick, England.
1,080,136. Sprinkler. J. P. Campbell, Lakesville, Me.
1,080,259. Antiseptic attachment to tires. W. F. Budd, Elizabeth, N. J.
1,080,284. Electric tire. W. Kops, assignor to Kops Bros., both of New York.
1,080,295. Tire. J. J. Patton, New York.
1,080,304. Tire sprayer. W. M. Schell, Chicago, Ill.
1,080,337. Demountable rim. L. A. Gordon, Fall River, Mass.
1,080,378. Spring wheel for vehicles. J. F. and H. E. Sipe, New York.
1,080,379. Spring wheel for vehicles. J. F. and H. E. Sipe, New York.
1,080,385. Tire for vehicle wheels. H. L. Stillman, Westerly, R. I.
1,080,394. Tire chain. J. Weaver, Oakland, Neb.
1,080,395. Syringe. A. E. Wilde, New York.
1,080,416. Tire. W. G. Chipley, Atlanta, Ga., assignor to Pneumatic Rim & Tire Co., Wilmington, Del.

Trade Mark.

- 73,534. U. S. Rubber Co., New Brunswick, N. J. The name *U. S. Rubber Co.* Rubber boots and shoes.

ISSUED DECEMBER 9, 1913.

- 1,080,534. Suspenders. M. Bono, New York.
1,080,572. Broom attachment embodying a pair of elastic strips. A. M. Donald, Central City, S. D.
1,080,580. Automobile wheel rim. O. L. Pickard, Columbus, Ohio.
1,080,592. A playing ball with a core of a soft vulcanized compound of rubber. A. T. Saunders, Akron, Ohio, assignor to A. G. Spalding & Bros., Jersey City, N. J.
1,080,621. Resilient wheel. J. R. Ayotte, assignor to Alexander Ayotte Auto Wheel Co., both of Chicago, Ill.
1,080,649. Spring wheel. A. Morgan, Independence, Mo.
1,080,659. Stopper for hot water bottles. C. F. Schuh, Newark, N. J.
1,080,683. Tire shoe making machine. C. A. Edmonds, Akron, Ohio.
1,080,720. Resilient vehicle wheel. L. H. Schoonover, Boise, Idaho.
1,080,770. Adjustable hose holder. W. H. Matthews, Dayton, Ohio.
1,080,814. Rim for mounting pneumatic tires. E. F. Dreger, Oakland, and F. E. Pister, Piedmont, Cal.
1,080,818. Automobile tire. A. H. Fisher, Lincoln, Neb.
1,080,821. Vehicle tire. C. F. Forster, Oak Park, Ill.
1,080,834. Resilient wheel. W. J. Jones, Martinsville, Va.
1,080,848. Inflatable horse collar. J. F. Pruden, Carnegie, Pa.
1,080,860. Device for building tires on rims. W. C. Stevens, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,080,909. Resilient wheel. R. B. and W. B. Gray, Chicago, Ill.
1,080,923. Grip tread for vehicle tires. C. J. Ohlsson, New York.
1,080,985. Inflatable supporter for trousers and the like. H. Leap, Chicago, Ill.
1,081,005. Cushioning device for tires. J. E. Strong, Wilmington, Del.
1,081,006. Elastic webbing and method of producing same. F. H. Frissell, assignor to Russell Mfg. Co.—both of Middleton, Conn.
1,080,010. Automobile tire. E. Nicklas, Breitung, Marquette, Mich.
1,081,016. Dress shield. F. A. Bush, Oakland, Cal.
1,081,146. Spring wheel. F. W. Pramschuer, Baltimore, Md.
1,081,154. Automobile veil with continuous elastic band. M. Salz, New York.
1,081,192. Wheel for automobiles and other vehicles. O. H. Attledge, assignor of one-fourth to W. N. Cox, one-fourth to C. W. Beale, and one-fourth to F. G. Bennett—all of Montgomery, Ala.
1,081,207. A soft rubber, hollow geographical globe. B. J. S. Cahill, San Francisco, Cal.
1,081,216. Vehicle wheel. S. A. Currin, Bristol, England.
1,081,237. Automobile wheel. J. A. Kolby, L. P. Larsen and C. P. Neilson, Ephraim, Utah.

Designs.

- 45,015. Bathing cap. T. W. Miller, Ashland, Ohio.
45,037. Water bottle, syringe bag or similar article. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.
45,038. Water bottle, syringe bag or similar article. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.

Foreign.

- 70,847. Lamont, Corliss & Co., New York. The word *Nugget*, over sparkling stone. Rubber heels for shoes of all kinds.

ISSUED DECEMBER 16, 1913.

- 1,081,296. Jaw brace composed of soft elastic rubber. J. P. Glass, Columbia, S. C.
1,081,299. Elastic tube splicing device. E. A. Franklin, Austin, Texas.
1,081,300. Tire for motor vehicles. J. C. Sipe, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
1,081,416. Vehicle wheel. A. R. Weaver, Batesville, Ark.
1,081,425. Cushion tire. Colonel E. Bright, Columbus, Ohio.
1,081,426. Cushion element for resilient tires. Colonel E. Bright, Columbus, Ohio.
1,081,434. Sink stopper consisting of an india rubber device. G. A. Cote, Montreal, Quebec, Canada.
1,081,460. Nipple for rubber bottles. J. P. Poirer, assignor to M. J. Poirer Rubber Co.—both of Akron, Ohio.
1,081,468. Drinking cup. H. M. Russell, Jr., Wheeling, Va.
1,081,518. Cushion tire for vehicles. J. Seadler, Sacramento, Cal.
1,081,520. Life preserver. A. Sommerfeld, St. Louis, Mo.
1,081,551. Resilient vehicle wheel. F. A. Pearl, Madison, Wis.
1,081,556. Bottle closure. F. E. Sanders, Chelsea, Mass.
1,081,574. Filtering apparatus for laboratory use. P. A. Boeck, assignor to Norton Co.—both of Worcester, Mass.
1,081,587. Vehicle wheel. P. B. Donahoo, Oakland, Cal.
1,081,613. Vulcanized caoutchouc and process of making same. F. Hofmann and K. Debnick, assignors to Farbwerke Hoechst AG., Elberfeld, Germany.
1,081,614. Caoutchouc substance and process of making same. F. Hofmann and K. Debnick, assignors to Farbwerke Hoechst AG., Elberfeld, Germany.
1,081,628. Cushion wheel. E. H. Schur, Hibbing, Minn.
1,081,648. Shoulder bag water spraying apparatus. D. W. Adams, Glendale Springs, N. C.
1,081,667. Spraying nozzle. H. W. Grann, Bedford Hills, N. Y.
1,081,675. Elastic webbing. W. Kops, assignor to Kops Bros., New York.
1,081,676. Elastic fabric. W. Kops, assignor to Kops Bros., New York.
1,081,688. Combined hose nozzle and lawn sprinkler. C. G. Mohl, Cadillac, Mich.
1,081,694. Automobile tire protector. F. Persic, Mionok, Ill.
1,081,698. Vehicle tire. A. S. Richardson, Jenkintown, Pa.
1,081,745. Nasal inhaler. W. A. Johnston and A. W. Browne, Prince Bay, N. Y., and F. L. Wallace, Lansdowne, Pa., assignors to The S. S. White Dental Mfg. Co., Philadelphia, Pa.
1,081,757. Vehicle wheel. S. T. Kronenberg, Pittsburgh, Pa.
1,081,765. Cushion tire. J. A. Mollitor, Chicago, Ill.
1,081,792. Process of making balloons. M. Vaniman, Atlantic City, N. J., assignor to International Aeronautical Cons. Co., of Maine.
1,081,793. Apparatus for building or covering balloons. M. Vaniman, Atlantic City, N. J., assignor to International Aeronautical Cons. Co., of Maine.
1,081,794. Balloon. M. Vaniman, Atlantic City, N. J., assignor to International Aeronautical Cons. Co., of Maine.
1,081,812. Tire and rim for wheels. J. B. Crawford, Sioux City, Iowa.
1,081,824. Vulcanizing device. H. Giusti, Frankford, Pa.
1,081,844. Spring wheel. A. Laurencich, Washington, D. C.
1,081,846. Pneumatic tire. J. J. Luck, San Antonio, Texas.
1,081,849. Life buoy. M. F. Matlack, Louisville, Ky.
1,081,862. Life saving suit. J. P. Park, Beloit, Kan.

Designs.

- 45,050. Tire tread. H. K. Raymond, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
45,051. Tire tread. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

ISSUED DECEMBER 23, 1913.

- 1,082,005. Hose supporter. J. Bellis, St. Paul, Minn.
1,082,029. Heavy car tire. F. W. Kremer, Rutherford, N. J.
1,082,096. Resilient tread. P. W. Pratt, Boston, Mass.
1,082,142. Irrigator. E. Spardel, Hamburg, Germany.
1,082,151. Wheel. J. W. Collinsworth, Leary, Tex.
1,082,182. Device for preventing excessive pressure in pneumatic tires. W. H. Van Winkle, Newark, N. J.
1,082,198. Nursing nipple. E. E. Iencsa, San Francisco, Cal.
1,082,203. Tire tread. D. Marshall, Cheltenham, England.
1,082,258. Vulcanizing device. J. E. Bancroft, Toledo, Ohio, assignor to Toledo Computing Scale Co., Newark, N. J.
1,082,299. Demountable rim. R. W. Ashley and F. Oberkirch, New York.
1,082,309. Concentrator belt comprising an inner surface of rubber belting. R. De Large, Ray, Ariz.

- 1,082,389. Spring wheel. E. R. White, Plattsburg, N. Y.
1,082,453. Resilient tire. C. F. Strohm, Carthage, Mo.

- 73,800. United Drug Co., Boston, Mass. The word *Monogram*. Druggists' sundries.
73,815. United Drug Co., Boston, Mass. The word *Druggists'*. Druggists' sundries.
74,124. The B. F. Goodrich Co., Akron, Ohio. The word *Hipress*. Footwear.

ISSUED DECEMBER 30, 1913.

- 1,082,522. Caoutchouc substances and process of making same. F. Hofmann, C. Coutelle, K. Meisenburg and K. Delbruck, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
1,082,600. Resilient wheel. F. W. Leib, Middletown, Ohio.
1,082,643. Life saving suit. T. Matthews, Brooklyn, N. Y.
1,082,637. Cushion tire. N. K. Parrish, Gainesville, Fla.
1,082,660. Inner tire. J. A. Thomson, Allentown, Pa.
1,082,900. Resilient wheel with compressible tread. F. F. Patzman, Kansas City, Mo.
1,082,915. Spring wheel. C. N. Sowden, Guantanamo, Cuba.
1,082,966. Elastic fabric. G. C. Moore, Worcester, Mass.
1,082,983. Tire inflating mechanism. E. J. Watson and R. F. Downey, Milwaukee, Wis.
1,083,000. Cushion tire for vehicle wheels. A. Casazza, Hoboken, N. J.
1,083,009. Vehicle wheel. F. E. Glasser, New York.
1,083,059. Resilient tire. R. Curry, New York.
1,083,140. Dress shield. H. P. Rindskopf, New York.
1,083,143. Tire. W. L. Ross and A. Leiffer, Bellare, Ohio.
1,083,164. Producing isoprene. F. Webel, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany.
1,083,165. Process of producing isoprene. F. Webel, assignor to Badische Anilin & Soda Fabrik—both of Ludwigshafen-on-the-Rhine, Germany.
1,083,188. Tire filler. D. L. Clark, Birmingham, Ala.
1,083,231. Method for making tires. A. E. Wale, Birmingham, England.
1,083,245. Vehicle tire. L. H. Ferguson, Ithaca, N. Y., assignor of one-third to Q. W. Wellington, and two-thirds to T. F. Rogers E. Force and C. G. Andrews, Corning, N. Y.
1,083,264. Sound record. L. H. Bakeland, Yonkers, N. Y., assignor to General Bakelite Co., New York.

Designs

- 45,083. Automobile tire. A. J. Allen, Seattle, Wash.
45,090. Rubber vehicle tire. W. C. Hendrie, Los Angeles, Cal.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

Patent Specifications Published in 1912

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 3, 1913.]
18,851 (1912). Treating india rubber trees. W. J. Bromley, Roxborough, Holyhead Road, Coventry.
*18,410 (1912). Syringes. F. B. Mulgrew, Heraldsburg, Cal., U. S. A.
*18,429 (1912). Block tires. E. H. Koken, Akron, Ohio, U. S. A.
18,492 (1912). Anaesthetic inhaler with pneumatic face piece. E. W. Poole, 54 Poland street, Oxford street, London.
*18,499 (1912). Vulcanizing chambers. A. Adamson, Akron, Ohio, U. S. A.
18,506 (1912). Synthetic caoutchouc. A. Heinemann, 223 North End Road, West Kensington, London.
18,509 (1912). Channel rim and block tire for vehicle wheels. R. D. Muro, 131 Calzada, Vedado, Havana, Cuba.
18,518 (1912). Tire attachments to rims. G. O. Williams, Pemberton Arms, Burry Port.
*18,584 (1912). Plates with rubber strips for expressing liquids from solids. J. J. Berrigan, 136 North Center street, Orange, N. J., U. S. A.
18,656 (1912). Steering connection for motor vehicles comprising a pneumatic cushion. H. C. Heide, 2 Broad street Buildings, London.
18,795 (1912). The outer cover of a pneumatic tire. R. W. H. Rodney, Orchard street, St. Augustine, Bristol.
18,798 (1912). Breathing apparatus for miners, etc. D. J. Lewis, Sunny Bank, New Road, Ynysybwl, Glamorganshire.
18,813 (1912). Vehicle wheels. I. Vagnetti, 5 Piazza Donatello, Florence, Italy.
18,814 (1912). Tires for vehicle wheels. A. Fortini, 17 Via S. G. vasio, Florence, Italy.

- 18,851 (1912). Parachutes. A. T. Desgachin, 33 Rue de la Gare, St Brieuc, France.
18,851 (1912). Treating rubber gums. E. S. Cohen, Ali, 34, Stadhoudersplein, The Hague, Holland.
18,853 (1912). Veils with rubber adjusting bands. W. Marler, Brooklyn, New York, U. S. A.
18,864 (1912). Solid tires or treads for tire covers. Coir Tire Co. and G. D. Rose, Northern Assurance Buildings, Albert Square, Manchester.
18,867 (1912). Balata covered rollers for painting rods and rubber device for removing excess of paint. J. Davie, 19 East street, Manchester.
18,871 (1912). Breathing apparatus. D. J. Lewis, Sunny Bank, New Road, Ynysybwl, Glamorganshire.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 10, 1913.]
18,877 (1912). Phonograph diaphragms mounted in a split rubber ring, etc. A. Kazubek, 37 Alboxhagen, Boxhagen Rummelsburg, and P. Burger, 9 Claudiusstrasse, Berlin.
18,880 (1912). Screw stopper particularly applicable to rubber hot water bottles. J. Hill, Blair Lodge, Alexandra Road, Reading.
18,932 (1912). Respirators. D. J. Lewis, Sunny Bank, New Road, Ynysybwl, Glamorganshire.
*18,936 (1912). Wheel tires. W. Langmuir, 798 Seventh avenue, New York, U. S. A.
18,941 (1912). Toy flying machines. Soc. Syndicat Pour l'Exploitation et la Vente Des Brevets Gorrichon, 7 Rue Saussure, Paris.
*18,968 (1912). A puncture proof device for pneumatic tires. C. R. Terrell, Montezano, Wash., U. S. A.
*18,970 (1912). Non-refillable bottles. F. F. Syracuse and J. E. Jahrans, 346 East 34th street, New York, U. S. A.
*18,979 (1912). Wheel tire tread bands, projections and surfaces. M. C. Overman, 391 West End avenue, New York, U. S. A.
19,029 (1912). Stocking suspenders, straps and bands. L. Harrison, 6 Tamworth Road, Hove, Sussex.
19,034 (1912). Making covers for pneumatic tires, etc. J. W. H. Dew, 8 Laurence Pountney Hill, Cannon street, London, and D. Bridge & Co., Castleton Ironworks, Castleton, Lancashire.
19,050 (1912). Parachutes. Baron A. Augedz, Odkolek, 10, Eliasgasse, Baden, near Vienna.
*19,094 (1912). Moulding wheel tires. M. C. Overman, 250 West 54th street, New York, U. S. A.
19,107 (1912). Medical syringes, etc. T. Holt, 28 Crossfield street, Warrington, Lancashire.
19,115 (1912). Vehicle wheels. F. Greenwood, Cockshutt Farm, Simonstone, Burnley, Lancashire.
19,147 (1912). Reinforcing rubber. F. W. Smith, High street, Christchurch, New Zealand.
19,148 (1912). Jackets and covers for rubber tires. F. W. Smith, High street, Christchurch, New Zealand.
*19,153 (1912). Rubber coated fabrics. L. A. Holmes, Green Island, Troy, and F. L. Bissel, Valcour—both in New York, U. S. A.

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 17, 1913.]
19,395 (1912). Aeronautics. G. Notarianni, 19 Bristo Place, Edinburgh.
19,437 (1912). Flexible bags. H. C. Martyn and A. Arbon, 116 Goswell Road, London.
19,513 (1912). Air tubes and chambers. W. Thiemann, 50 Dovenstadterstrasse, Linden, Hanover, and Gummiwerk-Solln-münchen Akt.-Ges., Solln, near Munich—both in Germany.
19,521 (1912). Detachable rim attachments to wheels. M. Kuller, 24 Durerstrasse, Gross-Lichterfelde, near Berlin.
19,531 (1912). Annular india rubber rings forming elements in buffer or draw springs for railway vehicles. A. G. Spencer, 77 Cannon street, London.
*19,591 (1912). Spring wheels. H. E. Stratton, Empire, Ohio, U. S. A.
19,615 (1912). Treating india rubber trees. Fiskus Des Schutzgebietes Kamerun, 62 Wilhelmstrasse, Berlin.
19,619 (1912). Suspenders. J. Nicholson, 4 Market Place, Whitehaven.
19,629 (1912). Tire attachments to rims. J. R. K. Law, 19 St. Vincent Place, Glasgow.
19,667 (1912). Clutch disks with rubber rings, for quickly starting and stopping gramophones. E. Kramer, 92 Graefestrasse, Berlin.
19,704 (1912). Spring wheels with continuous outer rigid ring and pneumatic rubber ring, and like cushions. A. Roe, 5 Waterloo Square, Anna Valley, Andover, Hampshire.
19,730 (1912). Studs and treads for wheel tires, stairs, etc. A. E. Wale, Coleshill, near Birmingham, and Wale's Invulnerable Tyre Syndicate, Broad street House, London.
19,750 (1912). Respirators for swimmers. S. Cohen, 120 Newgate street, London.
19,809 (1912). Tire and like inflating valves. G. A. Walmsley, Clifton, Wallace street, Grangemouth, Stirlingshire.
19,831 (1912). Top boot, the lining of which is secured by lacings, buckles, or elastic sides. F. Ward, 108 Melrose avenue, Streatham road, Mitcham, Surrey.
19,832 (1912). Driving belts, conveyor belts, etc. E. J. Rigby, 60 Queensborough Terrace, Bayswater, London.
19,886 (1912). Wearing apparel. D. W. Ogilvie, Gorgona, Canal Zone, Panama.

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 24, 1913.]
19,934 (1912). Driving belts. C. H. Gray, India Rubber & Gutta Percha Works, Silvertown, Essex.
19,964 (1912). Tread bands, projections and surfaces. J. C. Moore, Nightingale Hall, Lower Edmonton, London.

- 20,013 (1912). Stocking suspenders. H. W. Hall, Bassishaw House, Bassinghall street, London.
- 20,024 (1912). Garments or hats of flexible fabric having a rubber tube which may be distended to extend the edges. R. H. Popplestone, 42 Queens Road, Clifton, Bristol.
- 20,049 (1912). Process and apparatus for coagulating rubber latex by smoking. H. Hawthorn, Sheenhurst, East Sheen, Surrey.
- 20,087 (1912). Tires of the type comprising an outer cover, an elastic filling and a small air tube adapted to be inflated. H. J. Harde, 172 Kennedy street, Winnipeg, Canada.
- 20,097 (1912). Rubber insulation to separate phonograph stylus holder cross bar from sound box. O. Pirl, 16 Südstrasse Böhlitz-Ehrenberg, near Leipzig, Germany.
- 20,098 (1912). Strengtheners for vulcanite dental plates. C. O. Juterbock, 46 Leonard Road, Penge, London.
- 20,171 (1912). India rubber disc or plates for valves, etc. A. Möller and A. Hartmann, Globus, Gummi & Asbestwerk Ges. Ahrens-bok, Germany.
- 20,172 (1912). A cover for preserving jars comprising an india rubber cap. A. Möller and A. Hartmann, Globus, Gummi & Asbestwerk Ges., Ahrens-bok, Germany.
- 20,181 (1912). Spring wheels with springs between hub and flexible or non-rigid rim. C. Grenon, 5 Olive Ghat sr., Calcutta.
- 20,194 (1912). Nonmetallic elastic bodies and cores; tire attachments to rims; tread bands, projections and surfaces. T. E. Halliday, Glenesk, Bishopstoke, Hampshire.
- 20,204 (1912). Cow milkers. L. de Wyttenbach, 20 High Holborn, London.
- 20,235 (1912). Mud guards carried by wheels, comprising a rubber ring. D. Walker, 49 Prince of Wales Road, and T. Fiddim, 113 Randolph Road—both in Custom House, London.
- 20,261 (1912). India rubber compositions. E. Lamberty, 40 Eisenbahnstrasse, Wilmersdorf, near Berlin.
- 20,267 (1912). Indirubin dyes. P. A. Newton, 6 Brems Buildings, Chancery Lane, London. (Farbenfabriken vorm. F. Bayer & Co., Leverkusen, near Cologne, Germany.)
- 20,309 (1912). Process for strengthening worn tire cover fabric by forcing rubber solution between the layers before retreading. R. Strong, Farnborough, Hampshire.
- 20,338 (1912). Swimming appliances. H. and P. Starke, 23a Hauptstrasse, Gromwusterwitz, Germany.
- 20,355 (1912). Jackets and covers for wheel tires. T. D. Kelly, 9 Avenue Road, Southend-on-Sea, Essex.
- *20,413 (1912). A rubber composition or like tire. M. M. Weiss, 1902 Treadway avenue, Cleveland, Ohio, U. S. A.
- 20,496 (1912). Inner or air tubes for pneumatic tires. H. H. Gee, 2 Linden Grove, Sydenham, London.
- 20,508 (1912). Infants' soothers. A. Teitz, 4 Montrose avenue, West Kilburn, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 31, 1913.]

- *20,517 (1912). Printers' blankets, comprising a rubber impregnated body portion with covering vulcanized thereto. F. E. Ellis, 33 Crescent avenue, Revere, Mass., U. S. A.
- *20,541 (1912). Pneumatic cushioned vehicle wheels. A. Johnston, Great Falls, Mont., U. S. A.
- 20,558 (1912). Regenerating rubber. G. Reynaud, 5 Rue Salneuve, Paris.
- *20,559 (1912). Tread bands for wheel tires. J. Savoie, 33 Fales street, Central Falls, R. I., U. S. A.
- *20,664 (1912). Spring wheels for vehicles. V. E. Campbell, R. F. D. No. 2, Box 70, Watsonville, Cal., U. S. A.
- 20,703 (1912). Billiard table bed with layer of rubber interposed. J. Ashcroft, 37 Victoria street, Liverpool.
- 20,217 (1912). A protective shield for pneumatic tires. F. G. Chrystal, 463 Corporation Road, Birkenhead, and R. C. Midgley, 16 Buxton Road, Rock Ferry, Cheshire.
- 20,801 (1912). Machine for reinforcing insoles of boots and shoes by means of a canvas strip coated with rubber solution. Northampton Machinery Company, J. V. Collier and A. W. Edwards, St. Michael's Road, Northampton.
- 20,815 (1912). Balloons containing explosives for use in aerial warfare. J. H. Hall, 13 Gray's Inn Residences, Clerkenwell Road, London.
- 20,817 (1912). Rubber strips insulating trumpet of gramophone from cabinet. P. J. Morren, "Merriemead," Blakehall Road, Carshalton, Surrey.
- 20,872 (1912). Rubber substitute for use chiefly as the inner nucleus of a rubber wound golf ball. W. T. Hill, Greenhill, Rathen Road, Withington, Manchester, and R. Milne, Arnold avenue, Bishopbriggs, Lanarkshire.
- 21,011 (1912). Air tubes for tires and other rubber or like articles. Motorists' Purchasing Association, and C. C. Macdowell, 170 Piccadilly, London.
- 21,031 (1912). Tread bands, projections and surfaces for wheel tires. H. Agha, Eagle Lodge, Hale, Cheshire.
- 21,036 (1912). Spring wheels with continuous outer rigid ring and rubber cushions. A. Sordi, 5 Via Maraini, Lugano, Switzerland.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 459,358. (June 17, 1913). D. Marshall. Improvements in treads for pneumatic or other elastic tires, and in their methods of friction.
- 459,445 (September 5, 1912). J. Roche and M. Levy. Mud guard for wheels of all vehicles.
- 459,447 (September 5). G. Reynaud. Process for regenerating used rubber.
- 459,481 (June 20, 1913). Wale's Invulnerable Tyre Syndicate, Ltd. Tire cover and its mode of manufacture.

- 459,482 (June 20). Wale's Invulnerable Tyre Syndicate, Ltd. Wheel tire and its mode of manufacture.
- 459,507 (June 21, 1912). E. Scott. Tread for pneumatic tires.
- 459,519 (September 6), A. J. Platz. Mud guard.
- 459,606 (June 24, 1913). H. Kitcher. Improvements in wheel tires.
- 459,633 (September 10, 1912). A. Cremoun and P. Bieth. Mud guard.
- 459,693 (June 26, 1913). E. Zapport. Process for regeneration of rubber.
- 459,703 (June 30). Russian-American India Rubber Company. "Treugol-nick." Rubber envelope for tires.
- 459,794 (June 30). Russian-American India Rubber Company. "Treugol-nick." Cover for pneumatic tires with anti-skid projections.
- 459,795 (June 30). Russian-American India Rubber Company. "Treugol-nick." Cover for pneumatic tires.
- 459,852 (September 17, 1912). A. Honnorat. Elastic chamber.
- 459,886 (September 18, 1912). G. Reynaud. Process for desulphurization of vulcanized rubber.
- 459,978 (May 29, 1913). R. B. Stroup. Improvements in rubber footwear.
- 459,987 (June 13). C. K. F. Gross. Process for manufacture of rubber, starting from synthetic isoprene.
- 459,988 (June 13). C. K. F. Gross. Process for manufacture of isoprene.
- 460,069 (July 5). W. E. Muntz. Improvements in the manufacture of covers for pneumatic tires.
- 460,110 (September 25, 1912). C. J. Braun and E. A. Braun. Mud guard.
- 460,201 (July 10, 1913). H. E. Spelshouse. Improvements in wheel tires.
- 460,207 (July 10). T. Unsworth. Improvements in the construction of pneumatic wheels.
- 460,242 (July 11). H. Webb. Presses for the manufacture of articles composed of rubber or like substances.
- 460,243 (July 11). J. T. Szek. Process of manufacture of armed hard rubber.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

- 268,345, Class 30d (September 3, 1912). Ear protecting appliance consisting of an adjustable hollow piece of rubber, inserted in the organs of hearing. Dr. Hans Hasselbeck, Mannheim, and T. A. Weisser, Heidelberg.
- 268,387, Class 39b (December 25, 1912). Process for the production of a vulcanized rubber. Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen.
- 268,630, Class 39b (July 30, 1912). Process of obtaining rubber or rubber-like masses. C. E. Anquetil, Marseilles.
- 268,584, Class 47i (March 9, 1911). Extensible packing ring. Aktiebolaget de Laval's Angturbin, Järla near Stockholm.
- 268,843, Class 39b (December 24, 1912). Process for regeneration of vulcanized rubber waste. Dr. Hugo Hutz, Frankfurt, a. M.
- 268,947, Class 39b (February 21, 1913). Manufacture of a product resembling hard rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.
- 268,917, Class 63c (September 29, 1911). Improvements in hollow rubber tires. Giles Sheldon Doty and John D. Show, Philadelphia.
- 268,954, Class 63c (November 27, 1912). Protective cover for pneumatic tires. Hercules Pneumatik Werke, Bremen.
- 268,956, Class 63c (July 23, 1912). Rubber tires with fabric insertion. Karl Landgrebe, Dresden.
- 268,957, Class 63c (December 28, 1912). Manufacture of pneumatic tire covers. Ernest Clark and C. N. J. Winter-Irving, London.

THE KINGDOM OF BELGIUM.

PATENT PUBLISHED.

- 260,457 (November, 1913). Anti-skid appliance for rubber tires. J. Sternegger, Rabistrasse 39, Munich.

BREATHING EXERCISES TO BE SCIENTIFICALLY CONDUCTED.

An apparatus has been devised in France whereby breathing exercises may be conducted on a systematic and progressive scale, and without danger to weak lungs. A bottle marked with a graduated scale and of known capacity, is filled with water and placed in an inverted position in a vessel which also contains water, the liquid being retained in the bottle by reason of the atmospheric pressure. A rubber tube extending from the neck of the bottle is held in the mouth of the patient, who inhales through the nose, in the regular manner, and exhales through this tube, the air from the tube displacing the water in the bottle by degrees, the displacement being shown by the graduated scale and accurately measuring the extent of the exercise. The apparatus is intended for use in the open air or a well ventilated room, and the exercises are to be continued until all the water in the bottle has been displaced by air.

Review of the Crude Rubber Market.

THE feature of the London market for the Para rubber was the continued absence of important fluctuations. Prices only slightly varied within the limits which have prevailed since October, of 3s. 1d. to 3s. 2d.; the higher figure having been attained on the 23rd and the lower on the 8th.

During the last days of December prices were steady, the absence of any pressure of supplies, owing to the holidays, contributing to this situation. Stocks in manufacturers' hands were reputed to be small, but there was no inclination to anticipate future requirements.

Attention has been directed to the fact that the landings in England of Para rubber for the last six months of 1913 were 5,790 tons, and the deliveries 6,716 tons; a decrease in available supplies being thus indicated. Continental returns were of a similar character, imports having been 1,870 tons and deliveries 1,950 tons.

In accordance with the recent decrees, the 20 per cent. Brazilian export duty on rubber from the Acre territory has been reduced by one-tenth.

Whether to their advantage or otherwise, there is no doubt that the fortnightly auctions afford a steady outlet for the production of the rubber planting industry. During 1913, 23,500 tons have passed through the London sales. That the new year has opened in a manner satisfactory to plantations interests, is indicated by two January auctions having included about 2,000 tons. The first sale, which had commenced December 31, comprised 925 tons. While it opened quietly, it gradually improved; finally showing an advance equaling 1d. on prices of last auction, and the lower grades of crêpe being 1d. to 2d. per pound higher.

The second sale of the new year was held on January 14 and 15, being the largest one for some time, and including 1,114 tons. Of this quantity, 856 tons came from the Straits and 258 from Ceylon. Demand was good throughout, a farthing advance being recorded on the second day.

Forward sales of plantation rubber have been made, delivery ranging from February to December at 2s. 3¼d.

In the open market prices fell in the closing days of December from the level of 2s. 3¼d. established on 23rd, to 2s. 2¾d. on the 30th. The quotation returned to 2s. 3¼d. on January 2, reaching 2s. 3¾d. on 6th. It then receded to 2s. 3d. on the 8th, touching 2s. 3¾d. on the 9th and falling to 2s. 2¾d. on the 10th and 12th. From the 13th to the 21st it fluctuated between 2s. 3d. and 2s. 3¾d. On the 22nd it improved to 2s. 4¼d., and on the 23rd to 2s. 4½d.

Comparative prices of Para and plantation rubber during the last six months include the following fluctuations at certain dates:

	Para.	Plantation.
1913 July 26	3s. 7d.	2s. 9½d.
August 27	3s. 9½d.	2s. 8d.
September 25	3s. 7½d.	2s. 4d.
October 27	3s. 1½d.	2s. 2d.
November 22	3s. 2d.	2s. 4¾d.
December 23	3s. 1¼d.	2s. 3¼d.
1914 January 23	3s. 2d.	2s. 4½d.

Thus during the last four months fluctuations have been of small extent.

The Amsterdam inscription sale of January 7 included about 54 tons *Hevea* and 7 tons *Ficus*. With the exception of a few small lots the whole of the quantity offered was sold at very favorable prices. *Hevea* realized on an average 7½ per cent. above the valuations and *Ficus* 7 per cent.

An inscription sale was announced to take place at Havre on January 23 of 51 tons, principally from the French Congo, with a small quantity from Sumatra.

For January 21, an inscription sale was scheduled to be held at Antwerp, including 55 tons Congos and 130 tons plantation.

Antwerp statistics for 1913 show:

		Tons.
Stock December 31, 1912.....		510
Arrivals 1913, Congos.....	2,886	
Sundries	121	
Plantation	2,033	5,040
		5,550
Sales in 1913.....		4,991
Stock December 31, 1913.....		559

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and January 30—the current date:

PARA.	Feb. 1,'13.	Jan. 1,'14.	Jan. 30, '14.
Islands, fine, new.....	98@ 99	60 @ 61	64@ 65
Islands, fine, old.....			
Upriver, fine, new.....	104@ 105	73 @ 74	75@ 76
Upriver, fine, old.....		76 @ 79	77@ 80
Islands, coarse, new.....	51@ 52	28 @ 29	28@ 29
Islands, coarse, old.....			
Upriver, coarse, new.....	79@ 80	44½@ 45	44@ 45
Upriver, coarse, old.....			
Cametá	51@ 52	36 @ 37	34@ 35
Caucho (Peruvian) ball.....	78@ 79	44 @ 45	46@ 47
Caucho (Peruvian) sheet.....			

PLANTATION CEYLON.

Fine smoked sheet.....	105@ 110	60 @ 61	62@ 64
Fine pale crepe.....	104@ 105	56 @ 57	61@ 62
Fine sheets and biscuits.....	103@ 104	56 @ 57	60@ 61

CENTRAIS.

Esmeralda, sausage	77@ 78	39 @ 40	38@ 39
Guayaquil, strip			
Nicaragua, scrap	70@ 77	38 @ 39	36@ 38
Panama			
Mexican plantation, sheet.....			
Mexican, scrap	75@ 76	35 @ 39	35@ 37
Mexican, slab			
Mangabeira, sheet			
Guayule	60@ ..	35 @ ..	35@ 36
Balata, sheet	85@ 86		
Balata, block	55@ 56	45 @ 50	45@ 50

AFRICAN.

Lopori, ball, prime.....		44 @ 48	53@ 54
Lopori, strip, prime.....			
Aruwimi			
Upper Congo, ball red.....			
Ikelemba			
Sierra Leone, 1st quality.....	95@ 96		
Massai, red	96@ 97		50@ 52
Soudan Niggers	92@ 93		48@ 52
Cameroon, ball	75@ 76	28 @ 31	31@ 34
Benguela	73@ 74		
Madagascar, pinky			
Accra, flake	25@ 26	22 @ 23	20@ 21

EAST INDIAN.

Assam			
Pontianak	7@ 7½		6@ 6½
Borneo			

STATISTICS, PARA INDIA RUBBER (IN TONS) (INCLUDING CAUCHO).

STATISTICS FOR THE MONTH OF DECEMBER.

	1913.	1912.	1911.	1910.
Para Receipts	3,111 44	3,000	4,920	3,830
Shipments to Liverpool	1,080	210 = 1,290	1,620	1,290
Shipments to Continental	400	180 = 580	350	300
Shipments to America	1,630	160 = 1,820	2,210	1,340
America Deliveries	1,110	90 = 1,200	1,990	1,790
America Landings	1,130	130 = 1,280	1,800	1,770
Liverpool Deliveries	1,030	165 = 1,195	1,471	1,362
Continental Imports	550	180 = 730	350	300
Continental Deliveries	400	180 = 580	350	300

VISIBLE SUPPLY FOR JANUARY, 1914.

	1914.	1913.	1912.	1911.
Stock	3,610	765	1,450	2,405
Para, 1st hands	250	60	400	110
Para, 2nd hands	60	90	410	230
Syndicate	810	800	2,240	1,370
Stock America	160	30	350	270
Stock Continental	50	20	70	60
Africa Europe	550	170	1,800	830
Africa America	480	60	1,450	1,430
	3,610	765	1,450	2,405

Total Visible Supply, including Caucho. 4,375 5,570 7,050 5,852

CROP STATISTICS -30TH JUNE, 31ST DECEMBER, 1913.

	1913.	1912.	1911.	1910.
Para Receipts	13,850	16,390	16,480	19,060
Para Shipments to Europe	6,900	1,630	8,530	10,310
Para Shipments to America	6,690	1,140	7,830	10,300
England Landings, net	5,790	6,903	6,251	6,344
England Deliveries, net	6,670	7,933	9,521	6,515
America Landings, net	7,880	9,330	10,095	6,780
America Deliveries, net	7,870	9,150	9,685	6,650
Continental Imports, net	1,850	2,160	1,430	1,380
Continental Deliveries, net	1,930	2,240	1,470	1,370

POSITION 1ST JANUARY, 1914.

Decrease in Receipts during December, 1913, against December, 1912.	1,330
Decrease in Receipts—Crop, July/December, 1913, against 1912.	2,580
Decrease in Deliveries—Crop, July/December, 1913, England and America, against 1912.	1,573
Decrease in Deliveries—Crop, July/December, 1913, America, against 1912.	1,280
Decrease in Visible Supply Para Grades, against 1st January last year	1,165
Increase in Stock, England, December 31, 1913, against December 31, 1912.	593

WM. WRIGHT & CO.

London, 2nd January, 1914.

Being the fourth 40 tons Caucho Latex has shipped from Europe to America.

* A decrease of 1,540 tons Rubber, and 40 tons Caucho.

Amsterdam.

JOOSTEN & JANSSEN report [January 7]

Today's inscription sale displayed a firm tendency, and its result may be considered as very satisfactory. Next sale will take place on February 5.

Rotterdam.

HAVELAAR & DE VRIES report [January 17]:

Yesterday's sale was very animated, the whole quantity (24 tons *Hevea* and 10 tons *Ficus*) finding buyers at foreign parity. *Ficus* lots of fine quality met with a splendid sale.

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street

New York) advises as follows: "After the first week in January the demand for paper increased rapidly, banks in the city and out of town being in the market, some for large amounts. Rates eased off accordingly, and the last half of the month were quoted at 5 per cent. for the best rubber names, and 5½ per cent. for those not so well known."

Summary of New York Rubber Prices for 1913.

	Fine.	Coarse.	Fine.	Coarse.	Com.
January	\$1.02 @ 1.00	\$0.80 @ .84	\$0.97 @ 1.01	\$0.52 @ 0.58	\$0.52 @ 0.60
February	.96 @ 1.00	.72 @ .78	.92 @ .96	.47 @ .51	.48 @ .51
March	.88 @ .92	.64 @ .72	.85 @ .89	.41 @ .47	.43 @ .48
April	.78 @ .80	.50 @ .60	.70 @ .80	.37 @ .41	.39 @ .45
May	.81 @ .86	.54 @ .61	.78 @ .85	.38 @ .42	.40 @ .45
June	.87 @ .90	.54 @ .62	.80 @ .85	.33 @ .39	.40 @ .42
July	.84 @ .88	.51 @ .56	.74 @ .81	.29 @ .34	.37 @ .40
August	.81 @ .84	.51 @ .53	.74 @ .81	.29 @ .33	.38 @ .41
September	.80 @ .82	.48 @ .52	.70 @ .77	.28 @ .31	.36 @ .39
October	.78 @ .83	.47 @ .49	.67 @ .70	.28 @ .29	.36 @ .38
November	.75 @ .80	.46 @ .49	.60 @ .70	.28 @ .30	.36 @ .37
December	.70 @ .80	.44 @ .47	.59 @ .66	.27 @ .30	.35 @ .37

AVERAGE PRICES.

1913.	\$0.87	\$0.58	\$0.79½	\$0.36¾	\$0.42
1912.	1.11	.89	.95	.59	.63¾
1911.	1.18	.95	1.10	.64	.70½
1910.	1.01	1.30	1.09	.90	1.00
1909.	1.59¾	1.07	1.49¾	.66	.77
1908.	.93¾	.67	.88¾	.47	.52

NEW YORK PRICES FOR DECEMBER (NEW RUBBER)

	1913.	1912.	1911.
Upriver, fine	\$0.72 @ 0.76	\$1.06 @ 1.12	\$1.04 @ 1.07
Upriver, coarse	.44 @ .47	.82 @ .85	.90 @ .93
Islands, fine	.59 @ .66	.90 @ 1.00	.95 @ 1.01
Islands, coarse	.27 @ .30	.54 @ .58	.60 @ .64
Cameta	.35 @ .37	.56 @ .60	.60 @ .65

NEW YORK PRICES FOR 1913.

	Lowest.	Highest.	Lowest.	Highest.
January	\$1.05	\$1.14	\$1.03	\$1.12
February	.99	1.05	.96	1.03
March	.90	.98	.91	.96
April	.78	.89	.78	.90
May	.80	.87	.77	.86
June	.71	.80	.68	.77
July	.68	.71	.67	.69
August	.69	.71	.64	.69
September	.57	.67	.51	.64
October	.50	.63	.51	.54
November	.59	.66	.52	.61
December	.58	.62	.53	.56

IMPORTATIONS OF RUBBER INTO THE UNITED STATES

	1910.	1911.	1912.	1913.
Fine Para.....tons	10,274	10,818	13,185	10,072
Coarse Para	4,622	5,074	6,056	5,257
Plantation Ceylon	3,611	6,550	15,003	23,967
Centrals and Caucho.....	4,636	4,316	6,469	5,022
East India and Africa.....	9,773	8,324	9,338	4,406
Total	32,916	35,088	50,051	48,724

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound.

	Jan. 30, '14.
Old rubber boots and shoes—domestic	7 ½ @ 7 ¾
Old rubber boots and shoes—foreign	7 ½ @ 7 ¾
Pneumatic bicycle tires	4 ½ @ 4 ¾
Automobile tires	5 ½ @ 5 ¾
Solid rubber wagon and carriage tires	5 ¼ @ 5 ½
White trimmed rubber	10 ½ @ 10 ¾
Heavy black rubber	3 ¾ @ 4
Air brake hose	3 ½ @ 4
Garden hose	1 ½ @ 1 ¾
Fire and large hose	2 ½ @ 2 ¾
Matting	3 ½ @ 3 ¾
No. 1 white auto tires	5 ½ @ 5 ¾
Foreign auto tires	5 ½ @ 5 ¾

IMPORTS FROM PARA AT NEW YORK.

[See Figures for the Weight in Pounds.]

DECEMBER 26.—By the steamer *Stephen*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
A. M. & Z.	134,000	36,100	100,400	13,400	283,900
General Rubber Co.	104,900	19,600	77,800	800	203,100
Meyer & Brown	70,000	6,900	71,300	9,400	157,600
Henderson & Korn	77,800	13,500	74,000	19,800	185,100
H. A. Astlett & Co.	18,000	1,100	23,100	14,400	56,600
G. Amsinck & Co.	1,800	1,300	800	1,000	4,900
Total	406,500	78,500	347,400	58,800	891,200

JANUARY 6.—By the steamer *Gregory*, from Pará, Manáos and Iquitos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	198,000	32,700	88,800	31,500	351,000
General Rubber Co.	142,400	12,400	40,800	300	195,900
Meyer & Brown	100,700	9,500	81,200	68,000	259,400
Henderson & Korn	51,500	11,400	76,700	8,400	148,000
H. A. Astlett & Co.	22,600		27,900	21,500	72,000

American Export Co.	10,800				10,800
Johnstone, Whitworth & Co.	6,400				12,800
F. P. Dist & Co.					2,700
Henderson & Korn	3,600				32,600
Robinson & Co.	22,500				22,500
Total	581,100	66,000	321,800	145,200	1,114,100

JANUARY 17.—By the steamer *Basil* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	24,700	16,800	123,700		165,200
General Rubber Co.	106,300	26,500	22,000	400	155,200
Meyer & Brown	23,400	6,200	77,500	91,700	198,800
Henderson & Korn	43,500	9,200	37,600	5,400	95,700
H. A. Astlett & Co.	6,400	5,400	29,300		41,100
Johnstone, Whitworth & Co.	13,200				13,200
Ed. Maurer			11,200		11,200
G. Amsinck & Co.	5,000			2,800	7,800
W. R. Grace & Co.				28,300	28,300
American Export Co.	11,100				11,100
Robinson & Co.	18,000	300	2,600		20,900
Total	251,600	64,400	303,900	128,600	748,500

PARA RUBBER VIA EUROPE.

POUNDS.

DECEMBER 26.—By the *President Grant*=Hamburg:

Henderson & Korn (Coarse)	55,000
DECEMBER 30.—By the <i>Finland</i> =Antwerp:	
Rubber Trading Co. (Fine)	2,200
January 5.—By the <i>Carmania</i> =Liverpool:	
Arnold & Zeiss (Fine)	9,000
Raw Products Co. (Fine)	4,500
January 10.—By the <i>President Lincoln</i> =Hamburg:	
Henderson & Korn (Fine)	22,500
Various (Fine)	6,500
January 10.—By the <i>Baltic</i> =Liverpool:	
Arnold & Zeiss (Fine)	2,500
Raw Products Co. (Fine)	11,200
Raw Products Co. (Coarse)	5,000
January 19.—By the <i>Caronia</i> =Liverpool:	
Henderson & Korn (Coarse)	25,000
Raw Products Co. (Coarse)	16,500
Raw Products Co. (Fine)	16,500
Arnold & Zeiss (Coarse)	7,000
Johnstone, Whitmore & Co. (Fine)	7,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

DECEMBER 22.—By the <i>Mandeville</i> =Belize:	
Eggers & Heinlein	600
West Coast Rubber Co.	2,000
DECEMBER 23.—By the <i>Pastores</i> =Port Limon:	
Isaac Brandon & Bros.	600
DECEMBER 23.—By the <i>Carl Schurz</i> =Colombia:	
G. Amsinck & Co.	2,000
Mecke & Co.	1,000
Pottberg, Ebeling & Co.	2,000
DECEMBER 23.—By the <i>Seguerra</i> =Mexico:	
American Trading Co.	3,000
Laurence Johnson & Co.	2,500
Maldonado & Co.	500
G. Amsinck & Co.	200
American Trading Co.	300
DECEMBER 26.—By the <i>Metapan</i> =Colombia:	
R. del Castillo & Co.	1,500
DECEMBER 27.—By the <i>Monterey</i> =Mexico:	
E. Steiger & Co.	1,200
Mecke & Co.	300
DECEMBER 29.—By the <i>Panama</i> =Mexico:	
Meyer & Brown	1,000
Harburger & Stack	100
DECEMBER 29.—By the <i>Colon</i> =Colon:	
Mecke & Co.	700
Wessels, Kulenkampff & Co.	200
W. R. Grace & Co.	700
DECEMBER 29.—By the <i>Albana</i> =Cattagua:	
Mecke & Co.	4,000
G. Amsinck & Co.	2,200
A. Held	800
Various	1,000
DECEMBER 31.—By the <i>August W. Schurz</i> =Colon:	
Gravenhorst & Co.	300
A. M. Capen's Sons	500
DECEMBER 31.—By the <i>Danube</i> =Colon:	
Muller, Schall Co.	6,500
JANUARY 3.—By the <i>Finland</i> =Mexico:	
Meyer & Brown	2,000
F. Steiger & Co.	3,000
Gen. Export & Commission Co.	600
Harburger & Stack	300
Hermann Kluge	200
JANUARY 5.—By the <i>Vasari</i> =Bahia:	
Adolph Hirsch & Co.	12,500

JANUARY 6.—By the <i>Sutro</i> =Belize:	
Rosenthal & Sons	1,200
Eggers & Heinlein	1,000
JANUARY 6.—By the <i>Prince Sigismund</i> =Colombia:	
Kunhardt & Co.	2,500
JANUARY 7.—By the <i>Advance</i> =Colon:	
G. Amsinck & Co.	4,700
JANUARY 7.—By the <i>Emil L. Boas</i> =Colombia:	
Eggers & Heinlein	1,000
JANUARY 10.—By the <i>President Lincoln</i> =Hamburg:	
Rubber & Guayule Agency, Inc.	5,000
JANUARY 12.—By the <i>Panama</i> =Colon:	
G. Amsinck & Co.	8,000
Andean Trading Co.	2,500
Piza, Nepheus & Co.	2,500
Mecke & Co.	700
JANUARY 14.—By the <i>Prinz Joachim</i> =Port Simon:	
Gravenhorst & Co.	300
JANUARY 15.—By the <i>Tagus</i> =Colon:	
A. M. Capen's Sons	4,500
J. S. Sembrada & Co.	2,500
Gravenhorst & Co.	1,000
G. Amsinck & Co.	500
JANUARY 16.—By the <i>Titan</i> =Bahia:	
Various	5,000
JANUARY 17.—By the <i>Monterey</i> =Mexico:	
E. Steiger & Co.	7,500
Hermann Kluge	3,000
D. C. Andrews & Co.	1,500
JANUARY 20.—By the <i>Prince Eitel Frederick</i> =Colombia:	
Various	2,000
JANUARY 21.—By the <i>Carl Schurz</i> =Colon:	
G. Amsinck & Co.	12,000
Wessels, Kulenkampff & Co.	2,500
De Lima Cortissoz & Co.	600
Harburger & Stack	200
JANUARY 21.—By the <i>Pastores</i> =Port Limon:	
G. Amsinck & Co.	800

AFRICAN.

DECEMBER 22.—By the <i>Amerika</i> =Hamburg:	
Meyer & Brown	13,500
Arnold & Zeiss	18,000
Ed. Maurer	13,500
Rubber & Guayule Agency, Inc.	3,000
Various	45,000
DECEMBER 22.—By the <i>Pretoria</i> =Hamburg:	
Arnold & Zeiss	35,000
Henderson & Korn	11,200
Johnstone, Whitworth & Co.	3,500
DECEMBER 31.—By the <i>Campania</i> =Liverpool:	
Raw Products Co.	37,000
DECEMBER 30.—By the <i>Finland</i> =Antwerp:	
Meyer & Brown	15,500
JANUARY 2.—By the <i>New York</i> =Southampton:	
Meyer & Brown	7,000
W. Stiles	2,000
JANUARY 2.—By the <i>Pennsylvania</i> =Hamburg:	
Arnold & Zeiss	6,000

Charles T. Wilson	2,200
Various	11,000
JANUARY 5.—By the <i>Carmania</i> =Liverpool:	
Various	4,000
JANUARY 6.—By the <i>Caroline</i> =Havre:	
Arnold & Zeiss	75,000
JANUARY 10.—By the <i>President Lincoln</i> =Hamburg:	
Meyer & Brown	17,000
Arnold & Zeiss	8,000
Rubber & Guayule Agency, Inc.	27,500
Ed. Maurer	40,000
Various	12,000
JANUARY 10.—By the <i>Baltic</i> =Liverpool:	
Robinson & Co.	2,000
Raw Products Co.	4,000
JANUARY 13.—By the <i>Lapland</i> =Antwerp:	
Various	5,000
JANUARY 15.—By the <i>Oceanic</i> =Southampton:	
Arnold & Zeiss	35,000
JANUARY 19.—By the <i>Caronia</i> =Liverpool:	
General Rubber Co.	2,500
Robinson & Co.	4,500
Various	2,000
JANUARY 21.—By the <i>Vaterland</i> =Antwerp:	
Robert Badenhop	17,000
Various	16,500
JANUARY 21.—By the <i>Niagara</i> =Havre:	
Arnold & Zeiss	10,000
JANUARY 21.—By the <i>St. Laurent</i> =Havre:	
Arnold & Zeiss	11,200

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

DECEMBER 22.—By the <i>Manuel Arca</i> =London:	
Meyer & Brown	*41,000
Rubber & Guayule Agency, Inc.	*3,500
L. Blitz	*3,500
Rubber Trading Co.	*7,500
Raw Products Co.	*1,500
De Lagotellerie	*2,000
Malaysian Rubber Co.	*15,000
Johnstone, Whitworth & Co.	*45,000
Western Electric Co.	*33,500
W. Stiles	*2,200
Ed. Maurer	*18,500
Arnold & Zeiss	*33,500
Charles T. Wilson	*110,000
General Rubber Co.	*60,000
Various	*195,000
DECEMBER 22.—By the <i>Amerika</i> =Hamburg:	
Rubber & Guayule Agency, Inc.	*4,500
DECEMBER 22.—By the <i>Pretoria</i> =Hamburg:	
Arnold & Zeiss	*7,500
Robert Badenhop	*2,200
Various	*80,000
DECEMBER 22.—By the <i>Rotterdam</i> =Amsterdam:	
Robert Badenhop	*3,500
Robinson & Co.	*2,000
DECEMBER 23.—By the <i>Kroonland</i> =Antwerp:	
Meyer & Brown	*18,500
DECEMBER 24.—By the <i>Kioto</i> =Colombo:	
Meyer & Brown	*43,500
W. R. Grace & Co.	*35,000
Ed. Maurer	*25,000
Various	*17,000
DECEMBER 26.—By the <i>Majestic</i> =Southampton:	
Meyer & Brown	*6,000
W. Stiles	*7,000
Ed. Maurer	*1,100
A. W. Brunn	*1,500
Arnold & Zeiss	*50,000
Henderson & Korn	*40,000
DECEMBER 26.—By the <i>Monterey</i> =Singapore:	
Ed. Maurer	*11,200

CUSTOM HOUSE STATISTICS.

BOSTON ARRIVALS.

	Pounds.	Value.
Gutta-jelutong	68,819	\$2,525
Gutta-percha	33,959	4,003
India-rubber	51,443	27,224

COMPARATIVE RUBBER STATISTICS.

CONSUMPTION OF INDIA-RUBBER BY THE UNITED STATES AND CANADA (IN TONS).

[From the Annual Statistical Summary of Meyer & Brown, New York.]

DETAILS.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Imports to United States...	20468	23208	21842	24760	27623	28635	29936	29433	29477	31129	32916	35088	50051	48724
Exports to Europe.....	450	680	430	490	274	357	1625	558	480	681	1340	823	430	298
Add stock on January 1....	20018 712	22528 1198	21412 1399	24270 331	27349 256	28278 305	28311 537	28875 365	28991 606	30448 1553	31576 1332	34265 523	49621 636	48426 605
Less stock close of year....	20730 1198	23726 1399	22811 331	24601 256	27605 305	28583 537	28848 365	29240 606	29603 1553	32001 1332	32908 523	34788 636	50257 605	49031 395
Deliveries to manufacturers.	19532	22327	22480	24345	27300	28046	28483	28634	28050	30669	32385	34152	49652	48636



Vol. 49.

FEBRUARY 1, 1914.

No. 5.

TABLE OF CONTENTS.

Editorials:	
The Automatic Increase in Rubber Consumption	221
Rubber Literature	221
Prizes to Be Awarded at the London Rubber Exposition.	222
Getting Accurate Rubber Statistics	223
What the Rubber Chemists Are Doing	224
What the Rubber Chemists Are Doing.	224
Rubber Manufacturing Statistics in the Next Census.	224
The Rubber Club's Fifteenth Annual Banquet.	225
Some Neglected Near-By Markets. I—Colombia	229
New York's Fourteenth Annual Automobile Show	233
Rubber Trade in Germany and Russia in 1913.	236
An Antwerp View of Plantation and Para.	236
India Rubber Goods in Commerce.	236
Crude Rubber During 1913.	237
Some Vigorous Views from Singapore.	239
The Editor's Book Table.	240
The Rubber Trade in Boston.	242
Some Interior Views of the Firestone Factory.	243
The Rubber Trade in Akron.	244
The Rubber Trade in Chicago.	244
The Rubber Trade in Rhode Island.	245
The Rubber Trade in San Francisco.	246
The Rubber Trade in Trenton.	247
Foreign Trade Opportunities.	248
The India Rubber World Trophy at the London Rubber Show	248
Rubber Club Gathering Statistics.	249
A Few of the Latest Tires.	250
Obituary Record	251
[With Portrait of G. A. Lewis.]	
The Famous House of Faber.	252
[With Portrait of Frederick Faber.]	
Reduction of Rubber Footwear Prices.	252
News of the American Rubber Trade.	253
New Machines and Appliances.	258
New Trade Publications.	260
Calendars and Souvenirs for 1914.	260
New Rubber Goods in the Market.	262
Some Rubber Interests in Europe.	264
Rubber at the Paris Automobile Salon.	265
The Standardization Committee's Report.	267
Rubber Testing at Gross Lichterfelde.	267
A German Manufacturer on Rubber Consumption.	268
Rubber Notes from Japan.	269
Netherlands Indies Rubber Growers' Association	270
[With Portrait of A. G. N. Smit.]	
What Is the Matter with Rubber?	270
Some Rubber Planting Notes.	271
Tapping Results in British Guiana.	272
Recent Patents Relating to Rubber.	273
[Includes Patents from Great Britain, France, Germany, Belgium.]	
Review of Crude Rubber Market.	276

Antwerp.

RUBBER ARRIVALS FOR DECEMBER.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Nov. 30. kilos	546,599	707,545	634,262	568,148	735,616
Arrivals in December					
Congo sorts	234,444	168,881	321,169	234,673	215,983
Other sorts	8,721	13,294	56,424	30,414	57,985
Plantation sorts	134,363	144,064	73,721	35,616	42,029
Aggregating	923,175	1,033,184	1,085,576	868,851	1,051,613
Sales in December	363,894	522,124	410,838	280,639	510,101
Stocks, December 31.	559,281	511,060	674,738	588,212	541,512
Arrivals since Jan. 1					
Congo sorts	2,886,032	3,229,978	3,175,581	3,105,357	3,492,332
Other sorts	120,438	144,585	489,771	399,641	865,349
Plantation sorts	2,033,039	1,402,841	670,461	553,678	328,277
Aggregating	5,039,509	4,777,404	4,335,813	4,058,676	4,685,958
Sales since January 1.	4,991,288	4,930,882	4,249,387	4,011,974	4,740,181

RUBBER ARRIVALS FROM THE CONGO.

JANUARY 2. By the steamer *Anversville*:

Bunge & Co.	(Belgika) kilos	2,000
do	(Comp. Commerciale Congolais)	13,500
do	(Grand Lacs)	8,600
do	(Cie du Congo belge)	1,200
do	(Inter tropical)	13,400
do		2,700
Société Coloniale Anversoise	(Soc. franc. du H. C.)	22,735
do	(H. C.)	23,980
do	(Communière)	18,100
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde S. A.)	(Kasai)	67,000
do	(Comfina)	22,600
do	(Crevelde)	12,700
Charles Dehner	(American Congo Co.)	5,027
Willart Frères		4,000
		217,542

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to December 22, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain	7,377,602	14,590,452
To United States	4,267,949	5,745,870
To Belgium	1,178,666	3,699,438
To Australia	232,386	453,993
To Germany	195,138	364,971
To Austria	73,660	31,434
To Japan	68,415	286,069
To Canada	22,078	
To France	11,568	15,682
To Italy	6,378	44,754
To Russia	2,288	101,116
To Holland	2,282	992
To India	700	1,881
To Norway and Sweden	39	
To Straits Settlements		146,147

Total 13,439,149 25,482,799
(Same period, 1911, 6,112,722; same period, 1910, 3,074,783.)

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 2,383,758 pounds—1,797,179 pounds from the Straits and 586,579 pounds from India.—Ed. C. O.) To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date, deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

[From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.]

	Singapore,	Penang,	Port Swet-	
To—	Dec. 16.	Nov. 30.	Dec. 21.	Total.
Great Britain... pounds	19,511,595	13,838,133	23,336,727	56,686,455
Continent	308,116	157,333	2,996,319	3,461,768
Japan	1,020,790			1,020,790
Ceylon	122,851	316,267	1,353,005	1,792,123
United States	5,653,565	247,867		5,901,432
Australia	104,526			104,526
Total	26,721,443	14,559,600	27,686,051	68,967,094
Same period, 1912...	14,372,067	8,655,764	19,281,051	42,308,882
Same period, 1911...	6,635,618	4,547,062	11,505,738	22,688,418
Same period, 1910...	3,707,599	2,234,569	8,008,578	13,950,746

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MARCH 1, 1914.

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TABLE OF CONTENTS ON LAST PAGE OF READING.

WILL IRONCLADS BECOME RUBBERCLADS?

IT is stated by reputable English publications that the British Admiralty is engaged in a series of tests on a new kind of plate for English Dreadnaughts, to consist of rubber—at least in part—the present tests being made on plates of alternating layers of steel and rubber.

Such comments as have been made by the writers in non-technical American journals have been largely of a facetious nature, the writers allowing their imagination considerable play in picturing the great naval engagements of the future when the ironclads have given way to rubberclads. According to these writers, the skilled marksman of that day will not be satisfied to puncture the enemy's ship, but will so direct his projectile that it will carom along down the line, striking one Dreadnaught after another, in an endless chain of destruction, and he will exercise particular care that his shots do not strike broadside on and rebound against himself. A great sea fight will then become a sublimated game of billiards.

But there is enough in this idea of rubber protection

for engines of war to have engaged military and naval minds long before the present time. When Louis Napoleon, at that time Emperor of France, visited the memorable Goodyear exhibit at the great Paris Exhibition in 1854, he was particularly struck by a pile of large rubber balls standing in one corner, and he remarked later that while he had often thought rubber might be used in warfare for defensive purposes, it had never occurred to him that it was suited for the manufacture of cannon balls. It was explained, diplomatically, to the imperial mind, that these were not cannon balls, but ordinary footballs. There is nothing to indicate, however, that the Emperor took any active steps towards putting his idea of rubber defense into practice, nor has very much of a practical nature been done in this direction since Napoleon's day; but there is no reason why such tests as it is said the British Admiralty is now engaged in should not be made.

It is certainly quite possible that some combination of rubber and steel—in fact, it is quite thinkable that rubber alone, if subjected to some toughening process yet to be discovered—might be a very effective protection for the great sea-fighters. At least it entails no great expense to prepare a series of targets made of varying arrangements of steel and rubber layers and to see how they act under the impact of modern projectiles. And ammunition might be put to very much worse uses. And if it should be found that rubber could be substituted, in part or *in toto*, for the thick steel plates that now cover the sides of the great men-of-war, what a note of joy would arise from the eastern planters, for no longer, then, would there be any cause for worry as to what is to be done with that 300,000 tons of plantation rubber looming up in the near future.

THE CASH VALUE OF ONE GOOD SNOW STORM.

WHEN that spirit of pessimism which will occasionally afflict even the best of business men comes upon the dealer in rubber footwear, he is wont to complain that we no longer have any good, old-fashioned snow storms such as there were in his boyhood days. It is natural for a man with a large stock of rubber boots and shoes on hand to get into this frame of mind when winter advances well toward spring with one day of sunshine succeeding another; but, as a matter of fact, the statistics of the weather bureau show that, taking one year after another, there is now just as much precipitation, and as much of it in the

form of snow, as was the case a generation ago. If snow storms come late they are very apt to come deep; as an illustration of which may be cited the great storm that swept the country during the second week of February, after several months of mild, autumnal, snowless weather.

The financial writers for the daily press, as is quite natural to people of their calling, immediately began to estimate, after this storm, just how much it signified to the rubber manufacturer—and some of them computed that it meant a net profit to the United States Rubber Co. of \$1,000,000, or equivalent to 3 per cent. on its common stock. Perhaps at first blush this might seem like an extravagant assertion, but let us see:

The bulletin issued by the Weather Bureau for that week showed that this snow storm covered practically the whole northern half of the United States, from the Atlantic to beyond the Rockies, with the exception of a little diagonal strip through Kansas, Nebraska and Wyoming, and the fall was anywhere from a film of snow to a solid 40 inches.

As the part of the country affected is the more populous part, it is safe to say that over half the population, or probably 50,000,000 people, were put in a situation where rubber footwear was eminently desirable; and it is a safe venture to estimate that at least 20 per cent. of that 50,000,000 people bought a new pair of rubbers, in one form or another. That would make 10,000,000 pairs. And as the snow in most places was of unusual depth, so that ordinary light sandals and even storm rubbers would hardly serve—at least in the rural districts—it may be stated without fear of exciting any active controversy, that an exceptionally large number of arctics, gaiters and boots passed over the counter. So that the average amount of money spent for these rubbers would doubtless be at least \$1.50, making a snug total of \$15,000,000. It probably would be well within the bounds of reason to assume that the manufacturers make 10 per cent., on an average, on their sales; which would give the manufacturers a profit on that one storm of \$1,500,000. Just what proportion of this sum went into the till of any particular company it would be difficult to ascertain to a nicety, but it is undoubtedly safe to say that over 50 per cent. of it went into the coffers of the big corporation. So that the financial writers who estimated that that storm meant a net profit of a million dollars to the United States company, were probably not very far wide of the mark.

A GREAT LOSS TO BRAZIL.

BRAZIL, and especially the Amazon country, have sustained a serious loss in the death—which occurred February 18—of Dr. Jacques Huber. His attainments as a rubber botanist, his great activity as director of the Para Botanical Gardens, and his untiring efforts to advance the rubber interests of the Amazon—which have been dwelt on more fully in a later page of this issue—made him not only a recognized authority in all questions pertaining to the development of the vast rubber possibilities of the Amazon country, but a constant inspiration to all those who, like himself, ardently longed to see Brazil so shape, organize and utilize her resources that she could hold her own against the fiercest rivalry the East could create.

Tho the greater part of his time was passed in Brazil, and his chief labors performed there, and tho his death will fall most grievously upon his own country, still he was such an international figure that his untimely taking off is a loss to the whole rubber world.

A WISE MAN'S VIEW OF THE LABOR UNION.

AN official of one of the local labor unions in New England recently wrote a letter to President-Emeritus Eliot, of Harvard, asking why he was opposed to labor unions and adding that he, himself, believed that these unions had added greatly to the happiness of the working man by bringing about shorter hours, higher wages and improved conditions.

President Eliot replied that the unions had indeed accomplished these three particular results—the shortening of hours, the raising of wages and the improving of many conditions. He said his criticism was not directed against trade unionism, but against its methods, and he gave four very substantial reasons for his opposition to these methods, viz.: The habitual use on the part of trade unions of violence against persons and property, to gain their ends; second, the limiting of productiveness; third, the demand for a uniform wage without regard to ability or skill, and fourth, disregard of contracts—both those made by themselves and those made by their employers in their various business relations. The first and last of these methods, he stated, “are grave violations of the universal moral sense,” and the other two “rob the working man of strong motives for self-improvement and make it probable that he will not do any hearty, zealous, faithful work.”

The Doctor went further and said that the raising of wages and shortening of hours do not necessarily increase the working man's happiness; that happiness must come from interest in one's work—as the “whole progress of civilization depends upon universal, steady, productive labor”—rather than from success in avoiding it.

These are all very sound contentions of the wise New England scholar and should be taken to heart by every working man. There certainly is no happiness for the man who looks upon his daily occupation, whatever it may be, simply as a punishment from which he is to escape as early and often as possible. A man who goes through his daily task with one eye on his work and the other on the clock is sure soon to get a distorted vision—his work eye will grow weaker and his clock eye will get stronger. As President Eliot says, the two great objections against labor unionism as now conducted are its lack of moral sense and its system of rewarding the shirker rather than the worker.

CO-OPERATIVE ADVERTISING.

ONE of the large tire companies of Akron has given considerable publicity of late to the fact that it has established a service bureau in its advertising department for the purpose of supplying dealers selling the company's products with advertising copy and appropriate cuts. The dealer pays for his space but the matter to be used therein is supplied him gratis by the manufacturer.

This is altogether an efficient and sensible form of co-operation. There are undoubtedly a great many retailers who would like to advertise the goods they have to sell. They are perfectly willing to meet the expense—which often in the local papers of small communities is not very high—but the great bugbear with them is the copy. The preparation of an appropriate business announcement seems to them quite as formidable as the composition of a sonnet or a symphony. This service bureau maintained by the manufacturer saves the dealer all this disturbance of nerves and distress of mind, and also undoubtedly saves him not a little money, for space is of little value unless properly filled, and poor advertising often does more harm than good.

To be sure this is not a new idea. It has been tried, in some cases intermittently and in other cases continuously, by other rubber companies. The only sin-

gular feature is that it is not done by a greater number of manufacturers.

THE PERENNIAL MAKING OF AUTO. LAWS.

WHEN a member of one of our state law-making bodies cannot think of any other way by which he can render full service to his constituents for salary drawn he introduces another automobile bill. The legislators of nine states convened about the middle of January. Inside of the first four weeks 114 different measures regulating the use of the automobile had been introduced in these nine states, Massachusetts leading with 44.

As a sample of this class of legislation it might be interesting to cite one of these Massachusetts bills, which, if passed, would compel the use of a splash-guard on every motor vehicle. The fact that no splash-guard has yet been invented which really guards from splashing was of course an unimportant detail in the mind of the legislator. Splash-guards have been a subject of considerable experiment, particularly in Europe, and especially in Paris—some made of rubber, some made of metal, and some made of both—but none has as yet been devised that efficiently lives up to its name. But, as already said, that fact in no way disturbs the law-maker, who insists on making splash-guards compulsory.

Several western municipalities recently passed ordinances compelling all motor wagons to be equipped with fenders, regardless of the fact that no fender that would really fend has yet been discovered. But probably the effect of this sort of legislation is to spur inventors on to greater efforts in devising efficient fenders and workable splash-guards, both of which are to be desired—especially the fender, for even in these advanced days the preservation of human life is still generally looked upon as of rather more importance than the conservation of human clothes.

Cotton is being more and more largely used in conjunction with rubber manufacture. Hence the readers of this journal will be interested in the article which appears in another column of this issue, dealing with the questions of where cotton is grown, where it is marketed, and for what particular goods the various grades are suited. This article, together with the group of statistical tables which follow it, will doubtless be of interest to rubber manufacturers generally.

LECTURE ON RUBBER BY DR. E. MARCKWALD.

UPON the invitation of the Merchants' Guild of Berlin, Dr. E. Marckwald, the well known expert, delivered a lecture on rubber which has been reprinted. Owing to the fact of the lecturer being co-proprietor of the Henriques Laboratory and of the Rubber Central Bureau for the German Colonies, he had special facilities for handling the comprehensive subject of "Rubber, Its Extraction, Industrial Importance and Manufacture," which formed the title of his address.

Speaking, as he did, before a non-professional audience, it was natural that he should touch on many points with which rubber men are already familiar. Thus his references to the history and technology of rubber dealt with many known facts, such as Goodyear's discovery of the principle of vulcanization, and the subsequent investigations of Parkes as to the cold process. In the opinion of the lecturer there was no further event of importance in the technical history of rubber, until the production some years ago of the synthetic article.

In dealing with the various sources of rubber, he remarked that it is found in the gigantic trees of the primeval tropical forests of South America, Africa and Asia, while in the two last named continents it likewise exists in vines. It is, moreover, furnished by the ligneous shrubs of Mexico, and by the mistle-toe trees of Venezuela. He added that it was perhaps reserved for the near future to witness the extraction of the milk from a number of trees and shrubs on the steppes of German East Africa and Natal. In all, there are today distinguished more than a hundred species of plants yielding rubber, and countless varieties of the same.

The proportion of rubber in the latex varies considerably; the best *Hevea* containing about 42 per cent. and *Castilloa* 30 per cent. Dr. Marckwald's own investigations showed that the *Kickxia* latex of German East Africa yielded about 30 per cent. and that of the *Manihot* as low as 20 per cent. The coagulates of the various *Euphorbium* latices of German East Africa were found to contain 5 to 8 per cent. of rubber.

Rubber gathering in South America was fully described, the opinion being expressed that there is a large quantity of rubber in the relatively unexplored territory of the river Acre. Mexico has only acquired importance as a rubber country since 1902, when the first samples of guayule rubber were sent to Germany. It was at first supposed to be impossible to vulcanize this article, but experiments having demonstrated that process to be feasible, guayule rubber was soon taken up by the industry, being used in compounds by practically every factory. Exports of the article from Mexico rose to 5,000 tons in 1907 and to 10,000 tons in 1910. In 1912 they had receded to 7,000 tons. The revolutionary troubles have materially impeded the transport of the shrub to the factories.

The history of the Eastern Asiatic plantations was then dealt with, from the time of their establishment in 1876 with the Brazilian seeds obtained by Mr. Wickham. The areas at present under rubber are estimated as being: Ceylon, 138,000 acres; Malaya, 700,000 acres. With the anticipated increase of yield as the trees reach maturity, the lecturer estimated the production of plantation rubber as: 1916, 110,000 tons; 1920, 200,000 tons.

In considering this question he referred to the enormous dividends paid by the English companies, which amounted in the years 1909, 1910 and 1911 in various cases to totals of 937½, 700, 596¼ and 510 per cent. He urged the investment of German capital in such a profitable venture as the cultivation of rubber.

GERMAN COLONIES.

Perhaps the most interesting feature of Dr. Marckwald's lecture was his detailed reference to the German colonies, all of which with the exception of South West Africa, are interested in rubber, either at present or prospectively. The colonies which are thus interested are: East Africa, Kamerun, Togo, New

Guinea, Samoa and the islands of the South Sea. The total area under rubber in the German colonies is about 112,500 acres, with about 40 million trees. Of these totals 82,500 acres and 27 million trees belong to East Africa, which thus has over five-eighths of the entire rubber acreage. As the total cultivated area of German East Africa is about 200,000 acres, the proportion of 82,500 acres under rubber indicates its value as a factor in the development of the colony.

The lecturer expressed his opinion that the future of German East African rubber cultivation was threatened by a number of defects in extraction and preparation, caused by want of knowledge rather than by any fault of the planters themselves. He urged the need of German East Africa bringing on the world's markets cheaper and better products of uniform quality; also referring to the lack of support he had encountered when endeavoring to bring out the truth about conditions there.

MANIHOT RUBBER.

Manihot rubber, he remarked, will always be the chief rubber product of German East Africa, and if rightly prepared is of excellent quality. It has not been sufficiently appreciated by manufacturers and when tested for friction and elongation it has been found, in the speaker's opinion, equal to the best Brazilian Para.

CONSOLIDATION OF PLANTERS' INTERESTS.

Dr. Marckwald had experienced much opposition in his efforts to establish a community of interests between planters and planters' associations. He consequently advised the restriction of new capital investments until German East Africa had placed on the market a uniform and rightly prepared first-class standard quality.

OTHER GERMAN COLONIES.

According to the lecturer's statement, conditions in the other German colonies are more favorable than in German East Africa. In Togo plantation culture is fairly well developed by reason of the favorable labor conditions. The situation in New Guinea is relatively satisfactory. *Ficus* and *Castilloa* are cultivated in Kamerun in small quantity; *Kickxia* and (during the last few years) *Hevea Brasiliensis* having been added. Prospects for the latter in Kamerun are good, it having been successful in other parts of West Africa. Seeing the advantageous climatic conditions, the lecturer expressed surprise that the cultivation of *Hevea* had not been taken up at an earlier date in Kamerun.

MANUFACTURING, RECLAIMING AND SYNTHETIC RUBBER.

The various processes of manufacture were touched upon, the lecturer giving a general description of the salient features of each.

Dealing with the subject of reclaimed rubber, he explained that the principle consisted in the removal as far as possible of the filling material and the free sulphur, thereby making the rubber plastic and fit for use again. The reclaiming industry started about the same time as rubber manufacture, attaining importance only within the last 40 years in America and England, and much later in Germany. It is today of immense extent.

Synthetic rubber the lecturer characterized as a triumph of German science, the technical solution of the manufacture of which may be confidently looked for from the untiring work of German chemists.

DISSOLUTION OF GERMAN BENZINE TRUST.

The dissolution has been announced of the German Union Benzine Works, which has hitherto been acting as the selling agency of the Steaua Romana and the Asiatic Petroleum Co., the agreement between the two last named companies having lately come to a close. From the beginning of 1914 the selling agency is in the hands of the three German works of the Asiatic Petroleum Co. at Düsseldorf, Ratisbon and Wilhelmsburg.

The Uses of Rubber in Mining.

THE mineral industries of the Three Americas are enormous factors in the sales of india rubber manufactured goods. The past year's production of minerals from mines at home and abroad that are controlled by domestic capital is estimated at two and one-half billions of dollars. The annual production has been almost doubled since the year 1900. In rank of mineral production, Pennsylvania has been for many years in the first place. But the center of distribution of all kinds of rubber products for our mineral industries is Chicago. Hose is a large item in purchases by mines. There are in our country, Canada and Mexico, probably 100,000 mines which use rock drills. Under present conditions, at least 850,000 rock drills are at work, and the average length of hose for each drill is 100 feet. In no other industry are conditions as hard against the life of hose as in most of the deep mines.

George W. Salisbury, of Chicago, was the father of the present-day system of making hose especially for deep mines where the temperature is high. Before going into the rubber business he had operated very large textile mills in New England, and then engaged in the making of rubber goods in the same locality before going West. He found a great deal of leather hose in use in Western mines, due to the fact that most of the mine captains and engine drivers and machinists were Cornish or Welsh, and adhered to old English practices. Most of that leather hose was made in the mine shops, and was slushed with grease in the belief that the grease largely increased its life. In 1883 George W. Salisbury brought out a special hose for mine work under the extremely trying conditions which existed in Montana and Nevada deep mines, where the average temperature was 110 degs. F. In one of John W. Mackay's mines at that time the men could not work more than twenty minutes at a time before keeling over in a faint, because of the high degrees of humidity and heat. In that mine the Salisbury pattern deep mine hose, wire wound on the surface, worked so well that even the Cornishmen admitted its superiority to the leather kinds.

Several fires in big mines in Pennsylvania that have been going on for many years, and which have been walled off at enormous cost to confine them within a fixed area, could have been put out when they started if the mines had been equipped with good hose. One fire has been burning in

Montana since 1881, and has destroyed many millions of dollars' worth of copper and silver ores. One in Pennsylvania has been burning over fifty years. Fire protection in mines lagged until good rubber hose came into general use. Today, every well equipped mine has a mine fire department with special pumps and mains and hose equipment maintained in the highest condition of efficiency, and rigorously inspected by the chief engineer. The timber used for props in mines in North America required the cutting down of well grown trees from an area equal to that of New York State and Rhode Island—50,420 square miles. Every year sees timber that represents the stripping of the trees from an area equal to four times that of New York City—1,308 square miles—put down the mouths of mines for props and other purposes. This gives an adequate idea of the value of a well equipped mine fire department in minimizing fire risks as to mine timbering.

A great deal of suction hose is used by the mining industry, and as all well-managed mines and quarries today are officered by technical engineers, the hose specifications demand the best to be had. A recent large shipment of suction hose for mine systems was made by a



ROCK DRILL IN DEEP GOLD MINE IN SOUTH AFRICA.

local pump making works to the gold mines of the richest native prince in East India. About sixteen billion gallons of water had to be pumped out of his mines, that have been flooded to the top of the collars since 1860. Almost three-fourths of the rock drills in use at the great gold and diamond mines of South Africa are made in this country, and so far as the orders of the chief engineers of those mines—mostly Americans—can be carried out, the hose and fittings of rubber for these machines are shipped from this country.

The stock of rubber hose and rubber packing carried in the stores of the gold mines near Johannesburg, South Africa, is estimated at \$175,000. Stocks thereof at the Kimberley diamond fields are estimated at \$100,000. Specifications for rubber hose and packing are rigidly drawn and only the best grades are used.

In the mining, engineering and kindred industries there is developing a country-wide movement to buy rubber hose in accordance with specifications drawn with particularity, to ensure the best possible wearing qualities. The principal reason for this demand for high grade hose is because

wherever inferior sorts of hose are used disintegrated particles of the inferior substance get into the working parts of the rock drills and pneumatic tools and thereby reduce their efficiency. In almost all instances, where buyers of rock drills and pneumatic tools have found fault with the



TURNTABLE DRILL WAGON AT CHAMPLAIN BARGE CANAL

fault to be that of the makers of the inferior rubber hose that had been fitted to the machines. With high grade hose the machines always work up to the tables of efficiency calculated by the makers.

The work of the Catskill watershed for New York City's water supply is really a mining undertaking, and nearly all the engineers and mechanics have had experience in domestic and foreign mining. On this job there are almost 1,000 rock drills made by the Ingersoll-Rand Co., and each drill averages the use of 100 feet of rubber hose. The New York Barge Canal work is quite like a mining project for the most of its length, as a great deal of working in rock is being done by miners. The amount of hose, packing and belting of india rubber in use on this undertaking is estimated at \$197,000. It was estimated two years ago that the subway and tunnel work planned for New York during a period of five years would call for the purchase of india rubber and gutta percha manufactures to the amount of \$750,000.

Four of the larger American machinery making corporations have recently been at work on contracts for the developing of coal mines in East India. The rubber goods specifications connected with these contracts came to about \$75,000, and were filled by domestic manufacturers. A number of great mining developments are going on in Peru, Chili and Brazil by New York capitalists. So far, the expenditures for machinery and supplies for one of these mines in Peru have reached \$45,000,000—including the construction

of a railway. The purchases of rubber goods of domestic make for these mines constitute a big annual sum. The mines support a town of 20,000 inhabitants. The buyers for the mines buy in rubber goods a great deal in addition to hose, belting and packing, notably in rubber boots and all kinds of goods used in families. The writer hereof in asking Phelps, Dodge & Co., large miners of copper and coal and operators of mineral and other railroads in the southwest and Mexico, how many kinds of rubber goods they buy regularly, was turned over to the buyer's department, in New York, where it was learned that the house has a department store at its principal mines where as many as 500 clerks have been employed, and the purchases in rubber include every article that can be found on sale in a local department store.

There are several thousand mining corporations in the Three Americas which maintain general stores for the convenience of employes and their families. These stores are carried on by the same men who buy the supplies for the engineering departments of the mines. The usual practice at these stores is to keep several men in charge of the rubber and textile goods, ranging from stocks of belting and hose to rubber dolls and rubber tips for crutches. Within the Wall street district there are over a hundred buying



TRIPOD DRILL AT CHAMPLAIN BARGE CANAL

agencies for all kinds of supplies for domestic and foreign mines. Orders for rubber goods come to these offices from near and distant mines every day, and the volume of business is very large.

Mining in regions remote from supplies of fuel has been greatly advanced in recent years by the use of hydro-electric power. This has brought about a great increase in the use of

gutta-percha for use in power and lighting cables in and near mines. Many domestic and South American mines that are 10,000 to 12,000 feet above sea level, and that are hundreds of miles from woodlands and coal mines could not be worked at a profit with steam power, but are paying well under electric power. There are none but electric mine hoists in thousands of dividend-paying mines opened within a decade, and all modernly equipped mines are using electric lights so that this means a minimum change in the



GOLD DREDGE AT FEATHER RIVER, CALIFORNIA

in the mining industry for insulated cables and wire. The power and lighting capacity of all the mining plants in the Three Americas being accurately known by engineering societies, it is demonstrable that the insulated wire in use is not less than the equivalent of eighteen girdles of wire around the equator.

All makers of pneumatic tools relate that the mineral industry is daily increasing purchases in this field. The greater mines, as the Anaconda, and Calumet & Hecla, make a great deal of the compressed air machinery and tools which they use, and their machinery shops carry large stocks of hose and packing of special kinds made for steam, hydraulic, compressed air and pneumatic machinery. A big gold dredging plant in Montana that was designed and set up by the late Prof. N. S. Shaler, of Harvard University, is an interesting example of the uses of the best kinds of rubber hose, packing, special patterns of molded rubber goods and of gutta-percha-covered power cables and good insulated wires for the lighting plant. The plant is run with three eight-hour shifts of crews, and is highly profitable. Only the very best of rubber products is bought. Wherever enough water can be had to float a gold dredge, they are at work, and the industry is extending, as also is gold dredging by hydraulic methods. In both departments the consumption of suction and other kinds of hose is large.

In Alaska alluvial gold deposits are being worked where the ground is frozen fifty to sixty feet below the surface. Low cost petroleum from California has enabled miners to thaw the tundra to the depths where gold is found. Another important factor in this arctic-like winter industry is the high working properties of rubber hose and packing made with special reference to these uses. Good grade rubber hose is a prime factor in the economical working of alluvial gold mines in areas of our country that for a single year will show a yield of refined gold worth over \$10,000,000 at the United States Assay Office.

The accompanying illustrations of gold dredges, known in the mining industry as "gold ships," show types that are made

near the workings. These dredges cost from \$25,000 to \$75,000 each, and are employed wherever there is water enough to float them. In many instances the dredge digs the pound in which it is worked. The foreground, showing the hills (see illustration No. 6), is worked for gold by means of long lines of hose attached to powerful pumps. The streams from the hose wash out considerable alluvial gold, including good sized nuggets. There are 2,387 gold dredges of the latest patterns at work in North, Central and South America, and almost 1,500 in Asia, Australia and New Zealand. A recent report of a gold dredge worked in California is as follows: Cost of the dredge, \$50,000; worked 500,000 yards that yielded 20 cents worth of gold per yard; net profit \$83,000—being 128 per cent. per annum on investment. A miner panning alluvial gold cannot work more than one cubic yard a day, and the value of the gold therein must be at least \$3 to \$4 to pay him fair returns, whereas a dredge can make money by working over old placers given up by Chinamen content to make a dollar a day. The dredge business is in its infancy. A very small percentage of the known alluvial gold deposits has been worked by these machines in North America. This branch of mining buys india rubber goods in hose, packing, belting, boots, jackets and hats estimated, at retail prices, as amounting to \$1,875,000 a year, for all countries. Because most of the dredges and hydraulic gold mining plants are remote from sources of supplies, none but the very best grades of rubber hose, packing, belting, boots and clothing are bought.

India rubber boots, jackets, coats and hats are worn by 850,000 miners in North America in what is denominated "wet mines"—that is, mines in which, but for the pumping plants kept going all the time, the work could not be carried on. In this country's wet mines 150,000,000 tons of water are pumped every year. Estimating the annual purchases of india rubber clothing and boots and hats for the mining interest of North America, and upon the basis of known sales made by the stores maintained by a score of mining corporations whose main purchasing offices are in New York, the total sum is



GOLD DREDGING IN MONTANA

\$18,350,000, at retail prices. For mining engineers and managers of mines, special designs in boots and jackets and caps and hats of india rubber are made of the very best materials. The most popular patterns of india rubber garments worn by miners are almost the same in design as those made for President Andrew Jackson by the Roxbury India Rubber Co., when he visited Boston in 1834.

Among the Mexican native miners there is a good demand for the old style india rubber poncho, which is a blanket

with a hole through the middle into which the wearer puts his head. All through the West and Southwest where Mexican miners are employed they prefer the india rubber poncho to the india rubber jacket worn by miners of other races. Thousands of the Cornish, Welsh and Scotch miners employed in North American mines go to their homes in the old country once a year for a few weeks, and when they return they usually bring two pairs of india rubber boots and a jacket and hat of the kind made by British manufacturers for miners. Many of the mining captains of North America who are from Great Britain and who rarely go to their old homes import what they wear in india rubber through the express companies that traverse the mining areas. The question of price is not considered by these men. They want exactly the same make of india rubber garments and boots and hats that they wore when at work in Cornwall, Wales or Scotland.

CARBON BLACK FROM NATURAL GAS.

At the Wilsonburg (West Virginia) plant of the Union Gas & Carbon Co., manufacturers of carbon black, that product is obtained from the flames of natural gas. This result is attained by impingement of the flames on a smooth surface and the final removal of the deposit by steel scrapers, the product being used in the manufacture of printing ink, paint and rubber.

The natural gas is furnished by a well 3,000 feet deep, at a pressure of 950 pounds. It was formerly conducted to the carbon buildings through a 4-inch main, steam power being used for the scrapers, but the initial pressure of the gas is now utilized. It is now passed through the cylinders of the steam engine, thus obviating the use of steam. The piping was rearranged and the result is said to be quicker and more uniform response on the part of the engine. It not only provides free power, but reduces the labor.

A SENSIBLE SIZE FOR GARDEN OR LAWN HOSE.

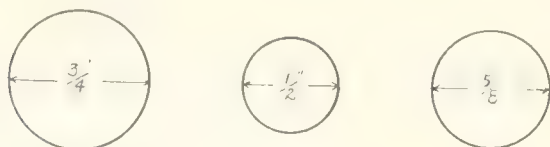
By F. C. Anderson, of the Electric Hose & Rubber Co.

IN the early days of the rubber business $\frac{3}{4}$ -inch water pipe and hose bibbs, or faucets, were general in plumbing specifications, which led to the manufacture of $\frac{3}{4}$ -inch hose as most suitable for garden or lawn use.

For many years past, however, $\frac{1}{2}$ -inch pipe and $\frac{1}{2}$ -inch or, the so-called $\frac{5}{8}$ -inch hose bibbs have been used almost exclusively. Half-inch pipe is .623 of an inch in internal diameter, virtually $\frac{5}{8}$ -inch, but, the opening through the valve seat of all $\frac{1}{2}$ or $\frac{5}{8}$ -inch bibbs is but $\frac{1}{2}$ -inch, and the bent neck is usually still smaller. It is therefore manifestly impossible to get more than a $\frac{1}{2}$ -inch diameter stream of water through the bibb, regardless of what may be the pipe size.

Half-inch might be thought the ideal hose size were it not for the increased loss of pressure through friction as compared with the loss in hose of larger diameter. Furthermore, the internal diameter of $\frac{1}{2}$ -inch hose couplings ranges from a little over $\frac{3}{8}$ -inch in the cast, to about $\frac{7}{16}$ -inch in the pressed brass styles, still further retarding the water.

Three-quarter inch continues to be the principal size, simply because so few hose manufacturers make or offer an intermediate size, and the hose buyer has no choice but to buy either $\frac{1}{2}$ -inch, which is too small for the best results, or $\frac{3}{4}$ -inch, which is too large.



Here are three circles representing diameters of $\frac{3}{4}$, $\frac{1}{2}$ and $\frac{5}{8}$ of an inch. I submit that it is a waste of material, money and energy to use hose of this size (Fig. No. 1) to convey

water from an opening of this size (Fig. No. 2) when this size (Fig. No. 3) will do it as well and last longer.

To determine the relative efficiency of different sizes of garden hose the following test was made, from which it will be seen that, for all practical purposes, $\frac{5}{8}$ -inch is fully equal to $\frac{3}{4}$ -inch hose.

TEST TO DETERMINE COMPARATIVE QUANTITY OF WATER SUPPLIED THROUGH FIFTY FEET EACH OF $\frac{1}{2}$ -INCH, $\frac{5}{8}$ -INCH AND $\frac{3}{4}$ -INCH GARDEN HOSE, UNDER AVERAGE CONDITIONS OF SERVICE.

Size of hose.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.
Water pressure on main	45 lbs.	45 lbs.	45 lbs.
Time required to fill a 50-gal. tank, with nozzle on hose.....	11 min.	8½ min.	8¾ min.
Ditto, without nozzle.	9 min.	5½ min.	5 min.
Time required to supply 1,000-gal. with nozzle on hose.....	3 hr. 40 min.	2 hr. 50 min.	2 hr. 45 min.
Ditto, without nozzle	3 hr.	1 hr. 50 min.	1 hr. 40 min.

Ordinary "Gem" spray nozzle, having $\frac{1}{4}$ -inch discharge, used in test, and hose attached to $\frac{1}{2}$ -inch hose bibb on standard $\frac{1}{2}$ -inch pipe.

For several years I have advocated the sale and use of $\frac{5}{8}$ -inch hose, for the following reasons, viz.:

Five-eighths inch hose will deliver practically as much water through the nozzle in a given time as will $\frac{3}{4}$ -inch, under usual service conditions.

Five-eighths inch hose, when full of water, weighs very much less than $\frac{3}{4}$ -inch, and is easier for women and children to use.

Five-eighths inch hose, weighing less than $\frac{3}{4}$ -inch, will not wear out so quickly when dragged over stone, cement or gravel walks, etc.

Five-eighths inch hose will withstand greater pressure than will $\frac{3}{4}$ -inch of the same quality.

Five-eighths inch hose will not kink so readily as will $\frac{3}{4}$ -inch.

Five-eighths inch hose will outwear $\frac{3}{4}$ -inch under like conditions of use.

Five-eighths inch hose costs less than $\frac{3}{4}$ -inch, but may be re-tailed for about the same price.

Nearly all hose manufacturers now make from ten to twenty grades of garden hose, necessitating the manufacture of both $\frac{1}{2}$ and $\frac{3}{4}$ -inch sizes in each and every grade, and the stocking of both sizes in all grades in the parent and branch houses, also in the hands of consignment agents. Whereas, if manufacturers would make the $\frac{1}{2}$ and $\frac{3}{4}$ -inch sizes in only the same limited number of grades in which they now make larger sizes of water hose, and sell these two sizes by the same list and discount plan, then adopting $\frac{5}{8}$ -inch as the standard garden hose size, and the only size on which net prices per foot are to be made, they could cut their stock necessities at least one-third.

Instead of, say, 2,000 feet $\frac{1}{2}$ and 5,000 feet $\frac{3}{4}$ -inch in any, or all, grades, they need stock but about 4,000 to 5,000 feet of $\frac{5}{8}$ -inch only. This would release considerable capital, reduce the remnant assortment at the end of each season and minimize the probability of carrying over to the next season some one or more grades, or sizes that had to be stocked to meet possible trade demands that failed to arise. There would be the same quantity of hose sold, both in feet and dollars, with a decided reduction in stock necessities.

Retail dealers would also welcome this change as doing away with the present necessity of buying both $\frac{1}{2}$ and $\frac{3}{4}$ -inch, and "guessing" how much of each size they could probably dispose of the next season. It would cut their "guessing" problem in half at any rate.

These observations are offered after some thirty-eight years' rubber experience on and off "the road."

Cotton—Its Varieties, Geography, Market and Uses.

THE cotton production of the world may for industrial purposes be divided into two classes—cotton having a length of fibre up to about 1 1/16 inches and that of longer staple. The first class embraces 90 per cent. of the total production and includes ordinary American Upland, Mexican, East Indian, Russian, Chinese and Turkish cottons. It is spun into coarse and medium yarns up to about 60s, which go into the great bulk of cotton manufactures for wearing apparel, household and industrial uses. It can be grown in all parts of the world where winter is not protracted, as cotton requires six or seven months of good growing weather. There must be a fair amount of moisture, either as rainfall of at least 30 inches, but not exceeding 70 inches a year, fairly evenly distributed, or supplied by irrigation; and the mean temperature during the four or five chief growing months must be from 70 to 80 degrees. As these conditions obtain over a wide area of the world's surface, the capabilities of producing ordinary cotton of the "bread and butter" variety are practically unlimited. This country alone could increase its cotton acreage from the present figure of 37½ million acres to 120 million acres without encroaching on the acreage of other agricultural products.

The remaining 10 per cent. of production embraces American Sea Island, American long staple Upland, Egyptian, Peruvian, Brazilian and West Indian cotton, also small quantities of Turkish, Chinese and Sudan cotton and American cotton grown from Egyptian seed. This class commands a large premium in price, because of its restricted production and its special character, which makes it suitable for purposes where strength and fineness are indispensable. Its special character is either due to climatic influences, to seed selection or both. Long staple cottons are used for spinning fine yarns for making sewing thread, automobile tire linings, mercerized yarns, "silk" goods and for mixing with wool.

SEA ISLAND COTTON.

Only about 15 per cent. of this cotton is really raised on the islands along and the mainland near the South Carolina coast. The remainder is produced in a narrow belt extending from North Florida through Southeast Georgia. South Carolina, S. I. cotton constitutes the cream of the entire cotton yield of the world, as its staple attains a maximum length of 21.5 inches and can be spun into yarn as fine as 400s and 500s. Comparing with today's price of 13 cents for middling Upland cotton, fine South Carolina S. I. costs 21 cents and extra fine about 30 cents per pound. Florida and Georgia S. I. cotton has a maximum length of 17½ inches and is suitable for spinning yarns from 150s to 300s. Its present price varies from 17 cents for common to 21½ cents for fancy. In 1911-12 the total S. I. cotton production of this country reached 123,000 bales of 400 pounds each, but this proved temporarily in excess of the demand, and as at the same time a new Egyptian variety closely resembling medium S. I. came upon the market, prices became unremunerative and in 1912 the acreage was much curtailed. Production was cut in half, and even the present crop does not promise to yield more than 70,000 bales. Present prices in Liverpool are 2 to 3d. per pound below those of last year and 1½ to 3d. below those of two years ago, despite the greatly reduced supply. The apathy of the S. I. cotton grower is further increased by the fact that his fields will soon have to pass through the ordeal of the boll weevil invasion. In view of the length of time required to mature S. I. cotton, it is feared that the ravages of the insect will be disastrous and many farmers will abandon the cultivation of the slow growing S. I. variety, planting in its stead early maturing Upland cotton.

Outside of the United States some S. I. cotton is grown in the West Indies, on the Peruvian coast and in Tahiti. To bring out the chief features of S. I. cotton—length and silkiness of the fibre—it has to be grown near the sea. If grown inland these characteristics soon disappear and it becomes necessary to obtain fresh planting seed from South Carolina.

AMERICAN LONG STAPLE COTTON.

Until the advent of the boll weevil this variety was chiefly produced from selected seed in a strip of country about 75 miles wide and 200 miles long lying in the Mississippi Valley, between Memphis and Vicksburg. Since the appearance of this insect



COTTON PICKING IN THE SOUTH.

many farmers have abandoned the cultivation of this long staple cotton, which requires a long time to mature and is thus specially exposed to its devastating attacks. The United States Government is making praiseworthy efforts to introduce types of prolific big boll cotton of 1¼ to 1½ inch staple and possessing the essential early maturity. Such long staple American cottons are now grown in California and Arizona, in various localities of Texas, in the Red River Valley, in sections of Alabama and also in South Carolina. Very probably with the passing of the boll weevil scare in Mississippi, the "Delta" will also revert to the growing of long staple varieties when prices become tempting again. It is difficult to estimate the total production of long staple cotton in this country. Some experts do not

think that at present it exceeds a total of 30,000 to 40,000 bales. Due to strong competition of some Egyptian varieties, prices are not as remunerative as they used to be. Compared with 13 cents for middling Upland, long staples bring from 14 to 17 cents per pound, whereas in previous years premiums of 8 to 10 cents

EGYPTIAN COTTON

This cotton is grown in the Nile Valley, and at area of about



WEIGHING THE DAY'S PICKINGS.

1,750,000 acres, of which 1,350,000 are north of Cairo and 400,000 south of the Egyptian capital. Egypt being practically a rainless country, cotton cultivation is almost entirely dependent upon irrigation fed by the annual rise of the Nile. In order to obtain a uniform water supply a huge dam has been built across the Nile at Assuan, but while this removes the danger of insufficient Nile floods, the abundant supply so provided has led to water-logging of the soil, and the hopes of vastly increased crops of Egyptian cotton have so far not been fulfilled. Before the completion of the Assuan dam the Egyptian cotton crop had several times reached 6½ million cantars (one cantar equals 99.05 pounds), but long after the building of the dam and with abundant water supply the crop fell in 1909-10 as low as 5 million cantars. Since 1910 the Egyptian cotton crops have averaged 7½ million cantars. At one time the present crop bid fair to exceed 8 million, but a new insect pest, the pink boll worm, has caused much damage, and not more than 7¼ million cantars are expected of this crop. The following are the chief Egyptian varieties: Ashmouni—strong, brown, silky, mean length of staple 1¼ inches, used for balbriggan underwear and

yarns to about 80s; Afifi, Nubari and Assili—brown, lustrous, strong, fine, used for yarns up to 100s and brilliant surfaced goods; Abassi—1¼ inches, pearly white, used for sewing silk; Janovitch—1½ inches, fine strong, silky; Gallini—1½ inches, strong, bright golden; Sakellaridis—1½ to 1¾ inches, a recent variety, lustrous, white and strong, closely competing with the medium grades of American Sea Island.

Of the 1,750,000 acres under cotton last year about 800,000 were devoted to Afifi, Nubari and Assili; 45,000 to Abassi, 225,000 to Janovitch, 350,000 to Ashmouni and 260,000 to Sakellaridis. It is worthy of note that while in the United States the average cotton production per acre is only about 200 pounds of lint cotton, in Egypt, under the intense cultivation prevailing there, it rises to about 450 pounds per acre. Comparing with the present Liverpool price of 7d. for middling Upland, American cotton, the Egyptian varieties in good, fair quality are quoted as follows: Ashmouni, 9¾d.; Abassi and Nubari, 10d.; Sakellaridis, 10½d., and Janovitch, 11d.

PERUVIAN COTTON.

There are three kinds of cotton produced in Peru—Upland, Rough and Sea Island. The staple of these three varieties is 1½ to 1¾ inches. Rough Peruvian has a fibre of 1¼ inches and is kinky, closely resembling wool, which makes it specially suitable for mixing with that material. The Upland variety is smooth and white, about 1¼ inches long and in good demand. Most of it is produced along the coast north and south of Lima. Some cotton is grown there from Afifi (Egyptian) seed also from Sea Island seed, and good results are obtained. The great drawback to the development of cotton cultivation in Peru is the



HANDLING COTTON AND COTTON SEEDS ON THE MISSISSIPPI.

lack of irrigation works. The total crop amounts to 140,000 bales, of which one-third is of the "rough" variety largely exported to the United States. Comparing with the Liverpool price of 7d. for middling Upland American cotton, good rough Peruvian is quoted at 9d., smooth Peruvian at 8d., Peruvian Sea Island and Afifi at 10½.

BRAZILIAN COTTON.

Two kinds are grown, tree cotton and herbaceous cotton. The principal cotton section is in Northeastern Brazil. The staple varies from 1 to 1¼ inches, and in Liverpool commands a premium of ½d. over similar American varieties. The production is about 375,000 bales, of which half is consumed by Brazilian mills and the balance goes chiefly to Liverpool. While the area suitable for cotton cultivation is immense, labor is scarce and the main drawback is the uncertain and irregular rainfall, for notwithstanding the heavy rains on the Atlantic coast, the inland section, where most of the Brazilian cotton is raised, has frequently to contend with prolonged drought.

Other long staple cottons are raised in Asiatic Turkey (Smyrna), Sudan (Nubari and Afifi Egyptian), Tahiti (Sea Island) and China (Yangtze Valley, from American seed), but the quantities are so far small.

We thus find that the cultivation of low grade, ordinary and short staple cotton may be expanded almost indefinitely, but that at present at least the cultivation of fine long staple sorts is restricted—in this country by unremunerative prices and the boll weevil; in Egypt by the pink boll worm and inability to cope with the new condition of the soil brought about by the irrigation works, and in Peru and Brazil by lack of labor and inadequate irrigation. Beyond any doubt, should sufficient inducement be offered by high prices, the production of long staple cottons could be greatly increased, and steps in this direction are taken by the governments of the principal cotton growing countries.

SOME COTTON STATISTICS.

THE WORLD'S PRODUCTION.

IN considering the statistical position of cotton it may be of interest to look back a little at former years. The production of the last four years in bales of 500 pounds gross has been as follows: 1909-10, 19,623,000; 1910-11, 21,321,400; 1911-12, 24,953,000; 1912-13, 23,984,000. Of these quantities the United States furnished respectively about 52, 56, 65 and 60 per cent. of the total, the balance being principally supplied by British India, China and Korea, Asiatic Russia and Egypt. About a million bales each year (or 5 per cent.) come from fifteen other countries in smaller quantity, but the chief sources are the five specified in table A. Details of the fifteen less important sources of supply are shown in table B.

TABLE A.—WORLD'S PRODUCTION OF COTTON.

	(Bales of 500 pounds gross.)			
	1909-10.	1910-11.	1911-12.	1912-13.
United States..bales	10,315,400	12,005,700	16,250,300	14,313,100
British India.....	3,878,400	3,202,400	2,631,200	3,518,400
China and Korea...	2,675,000	2,675,000	2,675,000	2,675,000
Asiatic Russia....	800,000	1,000,000	960,000	1,000,000
Egypt	1,008,400	1,516,600	1,480,800	1,492,000
Other countries (15)	945,500	921,700	955,700	985,500
Total (20 countries)	19,623,000	21,321,400	24,953,000	23,984,000

TABLE B.—PRODUCTION OF 15 LESS IMPORTANT COUNTRIES NOT DETAILED IN TABLE A.

	1909-10.	1910-11.	1911-12.	1912-13.
West Indies.....	12,400	13,000	13,500	13,400
Mexico	130,000	145,000	105,000	150,000
Brazil	380,000	320,000	330,000	330,000
Peru	115,000	140,000	140,000	140,000
South America (exclusive of Brazil & Peru)	8,000	7,000	7,500	8,000
Europe	12,800	13,100	14,000	15,500

Dutch Indies.....	13,200	12,500	16,000	15,000
French Indo China.....	14,100	14,100	12,500	16,000
Philippines	6,100	6,100	6,100	6,100
Japan	16,900	7,400	7,000	7,500
Para	90,000	100,000	125,000	100,000
Turkey	108,000	105,000	124,000	115,000
Sudan	14,000	12,000	16,700	16,000
Colonial Africa.....	25,000	26,000	38,000	52,000
Oceania, etc.	300	700	400	1,000

Total 945,500 921,700 955,700 985,500

Comparing the total of the world's production for 1912-13 with that of the preceding year, it will be seen that there is a reduction of two million bales in the production of the United States, coupled with an increase of about a million in that of British India, the net difference being thus a reduction of about a million bales in the total. Again, comparing the figure of 1912-13 with that of 1909-10, an increase is shown of about 4 million bales, practically from the United States; the gain of half a million bales from Egypt being offset by a similar loss in the supply from British India. The average of the world's production for the last four years was about 22½ million bales.

AMERICAN PRODUCTION OF COTTON.

As has been shown in table A, the American crop not only constitutes the largest separate item of the world's product, but exceeds the combined importance of all the other components. The United States crops for a series of years are shown in table C, as increased from about 7 million bales in 1889-90 to 13,820,000 bales in 1912-13.

TABLE C.—COTTON CROPS OF THE UNITED STATES,

Expressed in Statistical Bales of 500 Pounds Net.

(In Thousands of Bales.)

Season of	Bales.	Season of	Bales.
1889-90.....	6,888	1901-02.....	10,344
1890-91.....	8,242	1902-03.....	10,274
1891-92.....	8,526	1903-04.....	9,682
1892-93.....	6,318	1904-05.....	13,436
1893-94.....	7,115	1905-06.....	10,919
1894-95.....	9,480	1906-07.....	13,269
1895-96.....	6,798	1907-08.....	11,089
1896-97.....	8,281	1908-09.....	13,458
1897-98.....	10,775	1909-10.....	10,155
1898-99.....	10,940	1910-11.....	11,834
1899-1900.....	8,997	1911-12.....	15,876
1900-01.....	9,991	1912-13.....	13,820

These figures illustrate the growth of the cotton industry within the last quarter of a century.

The distribution of the crop of 1912-13 was as follows:

Deliveries to

Great Britain	3,509,000
The Continent	4,964,000
United States	5,389,000
Canada and Mexico.....	171,000
Japan, China, etc.....	388,000

Total deliveries 14,421,000

The relative proportions of the three grades of American cotton included in the totals for the last four years were about:

	1909-10.	1910-11.	1911-12.	1912-13.
Sea Island ...bales	72,900	71,100	95,400	56,400
Upland	9,932,100	11,537,500	15,597,300	13,647,100
Linters	310,400	397,100	557,600	609,600

Total 10,315,400 12,005,700 16,250,300 14,313,100

THE COTTON SPINDLES OF THE WORLD.

While the world's production of cotton now shows an increase of 20 per cent. as compared with the year 1909-10, the number of the world's cotton spindles increased between 1907 and 1913 from 124 to 144 millions or about 15 per cent., thus proving that the facilities for handling the larger crop have been extended (as shown in table D).

TABLE OF COTTON SPINDLES OF THE WORLD

	1907.	1913.
United States, north.....	16,850,000	18,500,000
United States, south.....	9,500,000	12,000,000
Canada.....	800,000	800,000
Mexico.....	680,000	775,000
Brazil.....	800,000	1,000,000
Other America.....	100,000	200,000
Great Britain.....	50,700,000	57,000,000
Germany.....	9,300,000	10,925,000
Russia.....	8,100,000	8,950,000
France.....	6,800,000	7,400,000
Austria.....	3,600,000	4,870,000
Italy.....	3,500,000	4,600,000
Spain.....	1,900,000	2,200,000
Switzerland.....	1,400,000	1,450,000
Belgium.....	1,140,000	1,450,000
Sweden, Norway and Denmark.....	560,000	650,000
Portugal.....	420,000	480,000
Holland.....	400,000	480,000
Greece.....	70,000	75,000
India.....	5,300,000	6,465,000
Japan.....	1,500,000	2,200,000
China.....	750,000	1,000,000
Scattered.....	150,000	200,000
Total.....	124,320,000	143,730,000

The cotton industry is thus keeping pace fairly well with the supplies of the material as shown by the statistics of production.

NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

On Wednesday and Thursday, April 29 and 30, will be held the ninety-sixth annual meeting of the National Association of Cotton Manufacturers. Boston is the location selected and the sessions will be held in Paul Revere Hall, Mechanics' Building. The papers announced include addresses upon the following subjects: Improved methods in handling and dyeing raw cotton, yarns and piece goods; economy of handling material in cotton mills; prevention of decay in mill timbers; use of compressed air in cotton mills, and reducing hazards of cotton pickers.

Simultaneously with the notice of the meeting a circular has been sent out, announcing the establishment of a "Textile Customs Committee" to co-operate with other textile organizations in the enforcement of the tariff law, for which purpose a "Textile Bureau" has been established. The expenses of this movement are to be met by subscription among the members.

The new tariff law is susceptible of many and grave abuses by undervaluations of wool and cotton goods, which will call for unusual vigilance on the part of United States officers. Hence the establishment of the Customs Committee and Textile Bureau.

An exhibition of textile machinery will be held during the week of the meeting.

RUBBER HEELS AS DIAMOND GATHERERS.

A certain society woman from the opulent west recently created quite a stir in eastern circles by promenading "Peacock Alley" in the Waldorf-Astoria wearing evening slippers in the heels of which were a number of twinkling diamonds. But, to use a distinctly modern phrase, she "had nothing on" a certain Colorado sheriff in the purloins of Denver, who was sitting a few days ago—in the proper official attitude—tilted back in a chair with his feet upon a desk, when a friend, entering the office, discovered some sparkling object in the middle of the sheriff's rubber heel. On investigation it proved to be a diamond, valued at \$200, which the sheriff had picked up in his walks about town. If manufacturers of rubber heels don't make a strong point of this incident in their future advertising they will certainly be throwing away a golden—or more properly a diamond—opportunity for an effective appeal.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

FIRE HOSE SPECIFICATIONS.

Some time ago certain specifications of fire hose were established by the National Board of Fire Underwriters, Boston. A large number of circulars was sent out to the officials in charge of fire hose purchases in cities of the United States, stating that the fire hose of two specified companies was approved by the board and also that these companies were making use of the label of the Underwriters' Laboratories, Chicago. This action of the board has been alleged to be in restraint of trade and accordingly suit was brought against the board by one of the independent companies understood to be acting with thirty or more other manufacturers of fire and factory hose.

Among other grounds of complaint it has been alleged that the board has insisted upon a detailed inspection of the materials as well as the secret and other processes used by the plaintiff. It was further contended that the use of the labels would destroy the force and effect of the trade-mark, the hose coming to be sold by reason of the label. In this way the underwriters would become responsible for the goods of the manufacturer.

The case was lately heard in Special Term in Part III. of the Supreme Court, when the court dismissed the suit on the ground that no case had been made against the board.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of November, 1913, and for the first eleven months of five calendar years, beginning January 1

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
November, 1913.....	\$170,142	\$87,337	\$469,560	\$727,039
January-October	2,157,583	1,119,793	7,189,500	10,466,876
Total, 1913.....	\$2,327,725	\$1,207,130	\$7,659,060	\$11,193,915
Total, 1912.....	2,342,738	1,245,155	7,305,234	10,893,127
Total, 1911.....	2,085,613	1,565,146	6,528,022	10,178,781
Total, 1910.....	1,918,611	2,094,016	5,193,806	9,206,433
Total, 1909.....	1,637,018	1,474,559	3,978,186	7,089,763

The above heading, "All Other Rubber," for the month of November, 1913, and for the first eleven months of three calendar years, beginning January 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
November, 1913.....	\$134,083	\$43,721	\$177,804
January-October	3,481,131	504,875	3,986,006
Total, 1913.....	\$3,615,214	\$548,596	\$4,163,810
Total, 1912.....	3,034,699	544,477	3,579,176
Total, 1911.....	2,257,727	526,653	2,784,380

TESTS OF SPLASH-GUARDS IN PARIS.

The Paris General Omnibus Co. has been investigating the advantages of splash-guards for use on motor buses, 1,000 of which are said to be in operation in that city. Out of 300 appliances submitted to the company's engineers, 47 were selected for further trials, which were to be made at the company's expense on buses in daily service. Readiness was expressed to make further trials at the expense of the inventors, if the latter provided the appliances for that purpose.

It is being sought to define the ability of the guards to withstand the daily wear of city streets and the constant contact with curbstones. It is understood that should the tests prove that a practical and economical guard has been devised, their use will be made compulsory on all public vehicles. It is not proposed to enforce their adoption on private cars.

A general similarity distinguishes the splash-guards submitted for trial. They are either a rectangular piece of leather or canvas, hanging from the hub cap, or a deep circular ring of rubber or canvas, or a combination of both.

Difficulties and Dangers of Balata Gathering—Canoeing Up the Maroni River in Dutch Guiana.

By a Resident Correspondent.

ON a recent trip up the Maroni River we had an opportunity to witness how the enormous balata crop is gathered in the forests of Surinam and exported to the markets of the world. From the beginning to the end the work of producing and handling the product is most interesting, to say nothing of the risks and dangers attendant upon its safe transportation to the shipping port.

The balata districts on the Maroni are situated in a land of high and rugged mountains and valleys, extensive savannahs and fertile plains, where the grasses are ever fresh and green.

Twelve hours in a Government steamer—from Paramaribo, the



WATERFRONT, ALBINA

capital of the colony—brings one to Albina, a little town situated about 90 miles from the mouth of the mighty Maroni River, and the starting point for the balata fields. At Albina all arrangements are made for canoes and bush negroes to convey the expeditions up the rapid and dangerous river.

Leaving Albina with its queer, mixed population, we entered an altogether savage world, encountering very few civilized people during the two months of our trip. For the first few days we journeyed part of the night also, but we soon found this very dangerous, for there are many obstructions in this part of the river; and the lookout man—sitting at the bow of our canoe—who was supposed to keep a sharp eye, often fell asleep, with the result that both our lives and our property were imperiled.

In the daytime we often indulged in fishing with hook and line, as our blacks poled or paddled slowly up-stream, and usually we caught very large fish—so large, indeed, that one was sometimes sufficient to make two meals for our party—which comprised eight men all told—notwithstanding our enormous eating capacity.

As there were many kinds of water and tree fowls along the river, we dined frequently upon game. At other times, wishing a still greater assortment of food, and to enjoy the chase, we landed on the banks for a few hours to hunt deer, pigs, tapirs and the like. One morning, a fine pig having been taken in the thicket near the edge of the river, we landed on the first sandbank for breakfast. Getting ashore, a few of our men set to work at once to prepare the pig, while the others watched the operation.

These pigs subsist entirely upon wild fruits and vegetables, and the meat is excellent, especially if the animal is young. They have no layer of fat under the skin, as does the domestic pig.

Some varieties roam about singly, while others go in herds of one or two hundred.

When an enemy approaches one of these herds the alarm is given and they instantly arrange themselves in line of battle and advance to the attack, tossing their tusks constantly from side to side, grunting and snuffing and emitting a disgusting odor. If the enemy does not quickly make his escape he will be mangled. Jaguars always skulk near these swine bands, for they have but to steal up and seize a pig whenever they wish to dine. These great cats seem to know well the danger of an attack by the pigs, so they act discreetly. When one is hungry for pork he conceals himself close to the line of march of the swine, lying in wait until the entire herd files past; then, as the last pig is passing, he springs suddenly upon it, breaks its neck, drops it and scrambles up a tree. The unfortunate pig, of course, utters a squeal of alarm when seized, so its companions at once form in battle array and advance upon the foe. Soon they encircle the spot where the victim lies dead, but seeing no enemy they again form into line and move on. The jaguar then descends and enjoys a quiet meal.

As we travelled on we passed fine grazing lands, that appeared like beautiful meadows; then groves of shade trees, where we almost expected to see a farmer's house; and finally tracts of dense forest, where the branches of the huge, spreading trees were heavily draped and festooned with enormous masses of climbing vines. One of the many things that attracts one's attention in the forest of Dutch Guiana is the great spread of the branches of the trees, for they frequently appear to reach out from the trunk 70 or 80 feet.

We often landed at some charming arboreal palace to prepare and eat our food, for on the rocks and sandbanks we



FIRST LINE OF RAPIDS, MARONI RIVER

could not always obtain fuel, and were, moreover, exposed to the blistering heat of the sun. At such times, when we were not troubled by insects, we enjoyed a delightful picnic, with which our jungle banquet was in keeping. Occasionally we were forced to pass the night in the forest.

Late one afternoon we disembarked in the forest for dinner; but before we had finished our repast a storm broke and darkness closed in quickly upon us—darkness, too, that could almost be felt—obliging us finally to grope our way among the trees.

It was unsafe to re-embark, so we hastily hung our hammocks while we could still see a little. Our company of canoe men stretched themselves side by side on the ground, forming a human carpet, over which we were suspended, like judgment. The dripping of the rain from the leaves of the trees, the moaning and sighing of the wind through the forest and the incessant rumble and boom of the thunder made sleeping difficult. Soon the stratum of humanity on the ground was snoring loudly, undisturbed even by the bats that bled them on the toes. Some time after midnight, because of the stillness, we gradually became conscious of the fact that the storm had ceased, and the snoring also had ceased, but was succeeded by a continual slapping, for the mosquitoes had come in clouds, now that the rain and wind had stopped. "Let us go to the water front!" exclaimed the head canoe man to his companions, and the spot was promptly vacated by all but ourselves. They believed they would be free from the little pests in the open air, for, under the trees or in a house or tent they are a great torment all night long, whereas in the open air they are much less active. This time, however, there were myriads of mosquitoes in the neighborhood



LANDING PLACE OF DIOEKA VILLAGE, MARONI RIVER

of our camping ground. Sleep was impossible; and tho the darkness was still so dense that we had to feel our way down to the river, we struck camp, tumbled everything into the canoes, then, casting ourselves into the arms of the great, silent flood, began poling rapidly away.

We saw the track of the tapir everywhere, but did not have the good fortune to capture one while on the Maroni. They always made for the water at full speed when alarmed, remaining below the surface a surprising length of time. When the jaguar springs upon the back of the tapir and tries to break its neck he sometimes fails, for its neck is short, very thick and strong. It rushes madly toward the river at such times, dashing among the trees and through the dense underbrush, bolting under fallen trunks and bumping against some in a manner most unpleasant for its ferocious rider, so that he is usually glad to seize the first opportunity to dismount. The jaguar is known to have been killed in one of these wild stampedes, its neck being broken in collision with a tree. We have heard of such a horse and

rider tearing through an encampment and among hammocks occupied by sleeping men.

We were often entertained at dawn by monkeys roaring their morning anthem. The great volume of sound seemed to indicate that there were a dozen of these vocalists, when in truth they were but two, and only a quarter or half a mile distant. There are 30 or 40 varieties of monkeys in the hinterlands of Surinam, most of which will never be seen in zoological gardens, for they cannot live in captivity, not even in their native land. We frequently saw colonies of one kind or another climbing about among the tree-tops or sitting on their haunches observing us.

One day we sighted far up the river in advance of us what appeared to be two lines of soldiers drawn up at the water's edge. Studying the objects with a field glass we found them to be a line of giant storks standing at the margin of the river waiting to seize their breakfast of fish. They are as tall as a man, and standing in line their uniform black heads, white breasts and long black legs gave them a decidedly military appearance. The reflection in the water gave the illusion of a double line. I believe this is the largest bird that flies. It must have a long, clear space, or it cannot rise. From standing humped up, like a goose on a cold day, it takes a few hesitating steps, then several determined strides, then breaks into a run, followed by a long series of big jumps and flapping of its huge wings, until, finally, it gets clear of the ground.

As we travelled along late one evening we noticed a light some distance ahead and heard shouts coming from a sand island. Fearing that the shouting originated from unfriendly natives, and because of the darkness, our first thought was to pass on and not land. But a moment later we discovered that they were a friendly fishing party, so we went ashore. As we drew near to land our head man sang one of their familiar tribal songs. It was a joyful strain, tho extremely peculiar, suggesting, somewhat, the running and bleating of a deer. It is usually sung for the purpose of announcing to those on shore that visitors are arriving, that they are friendly and that they are happy to meet their friends on land. Our trumpets were also sounded and we played an English air on the flute. Our arrival appeared to give the fishing party much pleasure. The first thing they asked for was rice and fish hooks. They were all in nature's dress, except the captain of the band, who wore loin clothes.

Continuing our voyage at dawn we encountered before noon another cluster of natives in a hut on a sand island. Before we could get ashore they ran out into the water to meet us, and surrounding our canoes eagerly offered us cassava bread and bananas in trade for what they supposed we had.

We passed the next night at another group of huts on the mainland. The "Djoekas," who were very cordial, were expecting us, for the news of our approach had preceded us; so they gave us a royal welcome. The chief of the village—if I may call it one—appeared arrayed in a complete suit of civilian's clothes, consisting of white linen trousers and vest, black coat and hat. These he wore merely as decorations, not as a covering, for these people consider themselves fully and properly dressed without any such apparel. It was a remarkable sight indeed to us to descry in the gloaming, as we approached the land, what appeared to be a well dressed representative of advanced civilization entirely alone in a remote herding wilderness, surrounded by nude and painted savages. He had obtained these garments somewhere from a trading boat. We were escorted in state to a large hut where were assembled all the human inhabitants of the place; and after the reception we witnessed the wrestling game of which the Djoekas are very fond.

These people hovered about us in their canoes most of the time as we travelled. When possible we avoided eating our meals at their encampments, as we would have to share our food with them, and our supply of rice and potatoes was only sufficient for our own requirements.

A Djoecka village we visited near the mouth of the Gonnim River, a branch of the Maroni, is so remote and out of touch with civilization that the inhabitants understood scarcely anything of the local Dutch language. Nor are they cordial to strangers, regarding them, instead, with suspicion, for the reason that they are subject to attacks by the Indians, who live up the Gonnim.

While we were calling here one of the women sought to obtain a shirt from us for her young son. To make us understand what she wanted she used the sign language, imitating one's



EXPANSE OF STILL WATER, UPPER MARONI

movements when a mosquito bites him on the shoulder and he crushes it, the drawing on of a shirt and the feeling of contentment when "mosquito no bite more."

An umbrella aroused the curiosity of the savages wherever we went. Knowing that it opened somehow, one of them took it once and stood it point downward, apparently expecting it to open. As it did not do so he passed it to me to show him and his companions how it worked. As we opened it suddenly and it spread its wings, like some old, black goblin about to fly on an evil errand, the women uttered a low scream of fear and surprise. They often felt my linen coat and trousers, and my shirt, then made signs to me that these articles were very good to protect one from the flies and mosquitoes. They evidently thought that this was my only reason for wearing clothes. They also fingered my hat and boots, and pulled my mustache to ascertain if it were real or false, and gazed at us as we wrote our journals, for writing was a mystery to them. To many of them we were queer objects well worth going a long way to see.

Our experiences on the journey up to the balata concessions could fill many volumes; suffice to say we met with many rare people and experiences before arriving at our destination.

It is only after a trip such as we took, up a dangerous river and through the heart of the finest balata country in the world, that a fair conception of the industry can be grasped and an idea of the value of this wonderful substance obtained.

Arriving at a landing named Cottica, on the left bank of the Maroni, we obtained our first sight of the enormous sheets of balata, already tied up in bundles ready for transportation to Albini. They were of a dark brown color and looked as if they had undergone rough usage on their long trip through the forest to the river front, but on the other hand extraordinary care is taken in handling the parcels when descending the dangerous rapids.

All the balata is brought down the river. The canoes, if properly loaded, will hold about five tons of freight, and the crew, which consists generally of two black natives (Djoeckas), who are skilled river men, take chances on riding over the smaller rapids. We have watched them coming down the center of the river at racing speed, the paddles all in their positions on the gunwales, and when they approached a rapid the men would

work like mad to force their boat into the smoothest part of the current. Then the excitement was intense, as they shot down the steep incline like a mill race and went bounding over the great billows below, and finally entered quiet water again. They are not always lucky enough to come through so easily, however, as a wave may wash over the sides of the canoe or they may not be able to avoid some of the rocks and sunken timbers which abound in the dry season. Then a tragedy usually follows and the boat, balata and crew are lost. The balata sometimes may float in the water, but in most cases if the canoe sinks the cargo is lost forever.

The more conservative shippers generally insist that great care must be taken and compel their men to land above the rapids and either transport the balata around on land or lower the canoe down by means of ropes. When one considers that there are over 25 bad falls in these rapids and numberless minor swift places, one can realize the expense and risk on a cargo of balata worth, say, \$6,000, going down the Maroni River.

After a stay of two weeks on the concessions, making a general study of the methods employed in gathering the latex, we made up our minds to return to civilization. The tramp out to the river landing occupied nine hours of steady walking.

On our return voyage we passed 26 rapids, many of which were very dangerous. To pass these rapids we let ourselves down at times by means of a rope anchored to a rock, some of the men wading in the water and guiding the boat; at other times we shot over shallow places, scraping the bottom; again, we bolted headlong through narrow, rock-bound gateways, with destruction pressing us hard on both sides; again, we dashed madly, but with unerring aim, between great rocks that barely let us slip through; again, we tore at break-neck speed through a long, narrow channel where the outcropping reefs formed high walls on both sides; again, we flew along close upon some island, with the bushes raking us from stem to stern, and dodged skill-



TRAIL THROUGH THE BUSH TO BALATA CONCESSION

fully around short bends in order to avoid sunken rocks; again, we glided carelessly down rapids, where the water was deep, then caught ourselves by means of the poles and the exercise of great strength and dexterity, checking our progress completely, with destruction yawning for us just ahead and the current pulling us that way almost irresistibly; again, we rushed fearlessly through narrow passages with the angry waters washing our decks and whirlpools just beyond to the right and left; and finally, we floated calmly and slowly onward where all was quiet and peaceful and all danger was passed, and the canoe men either stretched themselves on the bottom of the canoe to rest or played games or sported in the water like river monsters at play.

Planters are uncertain as to the advisability of planting *Manihot Glaziovii*. A point of importance is that the area of the Protectorate over which the Ceará tree grows freely is much greater than that suited to other kinds of rubber; Ceará gives a quicker return than other varieties.

Statistics of the comparative exports from Uganda for the years ending March 31 show the following results:

	1911.	1912.
Wild rubber	99,700 lbs.	31,000 lbs.
Plantation rubber	62,000 "	233,000 "

Reports from Nyasaland state that the cultivation of Ceara rubber is gradually emerging from the experimental stage. Exports of cultivated rubber show a satisfactory increase, consisting almost entirely of Ceará, the Pará rubber not having attained the age for tapping. The total area under cultivation amounted in 1912 to 8,896 acres, of which 7,659 were under Ceará. The exports of uncultivated rubber were chiefly the product of the *Landolphia parvifolia*, extracted from the underground parts of the plant by combined mechanical and chemical processes, and being superior to the wild rubber exported from other parts of Africa.

A reduction of 50 per cent. is being made in the freight rates on rubber conveyed down stream on the Lualaba river (Belgian Congo); while a like reduction is being made on rubber carried by government steamers over the basin of the Upper Congo.

The budget of the Belgian Congo for 1914 shows an estimated deficit equaling \$4,000,000. While this deficiency is partly caused by increased charges for interest, it is likewise partially attributed to the smaller collections of duty anticipated. Shipments of rubber from the Belgian Congo to Antwerp for 1913 were 2,880 tons, against 3,230 in 1912; while the exports from the French Congo to Havre were 1,182 tons, against 1,077 tons in 1912.

GERMAN AFRICAN POSSESSIONS.

The German possessions in Africa which are interested in rubber are: German East Africa, Togo and Kamerun, the capital engaged coming chiefly from Germany. At a recent meeting held at Berlin, representing these interests, the various questions now affecting the rubber industry in German Africa were fully discussed. German capitalists with investments in *Manihot* rubber in East Africa have felt the effects of the large shipments of *Hevea* rubber from the Middle East and the consequent fall in values.

East African planters have been placed in a difficult and serious position. Of late years they had devoted themselves energetically to the cultivation of *Manihot* rubber, with the result that present estimates place the number of trees at 19 million, one-half of which have reached maturity. These 10 million trees are estimated to have produced 1,000 tons of rubber for export in 1912.

Among the elements of cost which planters find it necessary to reduce, labor forms an item of importance. In this connection, stress has been laid upon the lengthening of the workers' contracts. The term has been prolonged to a year, but of 365 working days and not 365 calendar days; a difference resulting from the fact that laborers in East Africa practically only work on alternate days. On the Malay Peninsula, Chinese workers are hired for a term of three years. It has been suggested to bring young laborers from the coast for long terms, but against this proposal it has been urged that they would not like to be absent three years from their families. Another plan has been the suggested importation of Portuguese laborers, through the assistance of the German government.

One difficulty in establishing the cost of production is the inequality of the quantity brought in by individual tappers, experienced workers often gathering twice as much as young hands. It is generally conceded that the prospects of the East African rubber industry depend upon reducing the cost of production. Whether the reduction thus established would be sufficient to

maintain the industry, would naturally be governed by the course of the market.

Tapping experiments commenced upon good trees by skilled tappers were not found to correspond with the later results, obtained under different and less favorable circumstances. Planters have been fully alive to the necessity of establishing and maintaining uniformity of quality, if East African rubber is to hold its own in the world's markets. A difficulty has, however, been indicated, arising from the lack of regularity in tapping



A PARTY OF TAPPERS, AND THEIR IMPLEMENTS.

results, there being a difference between the quality of the latex obtained from trees of various ages and at different seasons.

Several of the speakers at the recent Berlin conference pointed out that the opinions of individual planters do not coincide as to the most advantageous method of preparation. Differences in quality of rubber place it at a disadvantage; variations proceeding from the coagulant employed. At various times carbolic acid and acetic acid have been used, but these have of late been superseded by chloride of calcium, which produces an excellent quality of rubber. It has the advantage of being cheaper than other coagulants, but pays a 10 per cent. duty in East Africa.

Attention was called to the fact that the variation in its quality is a serious detriment to East African *Manihot* rubber, manufacturers being averse to making up compounds which they cannot be sure of repeating. One speaker remarked:

"No doubt exists that East African rubber, if rightly prepared, is a serviceable material. We have in Germany, as well as in America and England, manufacturers who, if it is placed on the market after being properly collected and prepared, would prefer it to *Hevea*, especially as they can buy it cheaper. . . . As medium African qualities cannot be delivered at today's prices, shipments will be restricted, which fact will send prices up."

In commenting on this subject, one authority urged that East African rubber had grown in favor with manufacturers, who would have used it more freely if they could have depended on getting the same quality again. According to his view, all rubbers which have been experimentally washed in East Africa, have proved unsatisfactory. This is due to the fact that *Manihot* rubber, when once washed, will not keep. He expressed disapproval of the proposal submitted to the Government for putting up a washing plant in the northern district of German East Africa at an expense equaling \$150,000 to \$175,000, while the plant could be erected at Hamburg for one-quarter the amount.

Rubber planting in Kamerun dates from the discovery by Professor Preuss in 1898 of the *Kickxia* in the elevated parts of the country. In the beginning of 1912 the Kamerun plantations had 4½ million trees, or one-half million less than a year before. The cause of this reduction was partly due to interplanting of *Kickxia* with cocoa.

As to *Hevea*, the opinion was expressed that provided longer contracts were permitted by the government, the cost of production in German East Africa would be about on a level with that in Eastern Asia.

Most Kamerun rubber plantations have the advantage over those of Asia that they have a supplementary crop, but this gain is partially offset by the restricted yields of the *Kickxia* and the immature age of the *Hevea*.

The deficient means of transport for provisions operates injuriously on the wild rubber industry of South and New Kamerun, the construction of new railways being intended to

remedy these conditions. Exports of rubber from Kamerun were: 1910, 1,960 tons; 1911, 2,700 tons.

At the meeting the following resolution was adopted as a result of the discussion:

"The present depressed state of the rubber industry in South Kamerun causes the Imperial Economic Committee to request the temporary suspension of the duty on rubber exports from Kamerun

Rubber, it is officially stated, is of much less importance for Togo than for German East Africa and Kamerun, exports for 1911 and 1912 being about 180 and 100 tons, respectively.

The Editor's Book Table.

THE CHEMISTRY OF RUBBER. BY E. D. PORRITT, B. SC.
London: London, 1913. Gurney & Jackson. 1 Cloth, 96 pages, 2s. 3d.

IN his position of chief chemist to the North British Rubber Co., Limited, of Edinburgh, Mr. Porritt has had exceptional facilities for the compilation of this valuable handbook—chiefly intended for those interested in rubber from a chemical point of view. Altho the treatment of technical practice has thus been limited, the details given afford a clear insight into the chemical questions involved in that branch of the subject.

Mr. Porritt divides his comprehensive work into six sections, covering the entire ground. Under the first two he deals with the properties and constituents of crude rubber, as well as its purification, constitution and derivatives. The two next sections discuss the methods and theories of vulcanization, including the constituents of mixings, hot vulcanization (with admixed sulphur), cold cure (with sulphur chloride), absorption theory of vulcanization and other important points.

With the fifth section a subject of more general interest is reached. Waste rubber may be broadly divided into two classes: (a) unvulcanized, (b) vulcanized. The radical difference between the two is that the former is soluble in solvents and is soft and plastic, while the latter cannot be obtained in solution without treatment entailing molecular destruction.

Unvulcanized waste consists of trimmings from shoes, football bladder sheet and other material. It generally contains no fabric and is used in the factory without treatment. In some cases it is necessary to remove the fabric before the proofing becomes available. This is effected by treatment with naphtha, wringing and subsequent evaporation of the solvent.

Vulcanized waste rubber may contain the following constituents: vulcanized rubber, inorganic filling agents, free sulphur, organic matters and foreign material. This waste is, moreover, non-plastic, and will not mill on the mixing rolls. As it is already compounded, its use is necessarily limited to a particular class of goods. It has thus been the aim of every inventor in this field to remove all the combined sulphur and fillings, obtaining the rubber portion in its original plastic soluble form.

The final section, treating of synthetic caoutchouc, deals with the preparation of isoprene and butadiene, as well as the obtaining of rubber from isoprene and its homologues. This monograph in its convenient form will prove of value to all interested in the chemistry of rubber, in theoretical or practical form.

INDUSTRIAL RESEARCH IN AMERICA. BY ARTHUR D. LITTLE.
Boston: Boston, 1913. Paper, 8vo, 3 pages, 1s.

In the address recently delivered by Mr. A. D. Little, as president of the American Chemical Society, at Rochester, N. Y. (and now reprinted), he touched upon the origin and development of the principal inventions on which modern industry is

founded. Referring to that of automobiles, he mentioned the fact that one tire manufacturer spends \$100,000 a year on his laboratory, thus indicating the value of industrial research to that industry.

DER MANIHOT KAUTSCHUK (MANIHOT RUBBER). BY PROFESSOR DR. A. ZIMMERMANN, Director of the Imperial Agricultural Institute, Amani, German East Africa. Jena, 1913. Gustav Fischer. [Paper, 342 pages, with 149 illustrations.]

In this comprehensive volume Professor Zimmermann has told the story of *Manihot* rubber, under the various aspects of its botany, distribution, cultivation, diseases, collection and prepara-



MANAGER E. KOHLER, STANDING BESIDE 11-YEAR-OLD *Manihot Glaziovii* TREE ON LEWA PLANTATION (G. E. A.).

tion. As it is known, there are 129 varieties of *Manihot*, of which 6 contain rubber—these being the following: *Glaziovii*, *Dichotoma*, *Pianhyensis*, *Heptaphylla*, *Violacea* and *Preciosa*. Of these the first four are the most important.

Manihot Glaziovii was discovered by Dr. Glaziov, the French

botanist, and was first described by Müller, of Aargau. According to Ule, it is indigenous to the Brazilian states of Rio Grande del Norte, Parahyba and Ceará, being chiefly known as Ceará rubber, or as Maniçoba Ceará. In its natural home it attains a height of 50 feet, with a girth of 5 feet; some trees being 100 years old.

Manihot Dichotoma was discovered by Ule in the southeastern part of the state of Bahia, and derives the name of Jeque Maniçoba (or Jeque rubber) from a small town in the center of the district in question.

Manihot Panchyensis is found in the southeastern portion of the state of Piahy and is also known as Maniçoba de Piahy. The trees are small, from 7 to 16 feet high.

Manihot Heptaphylla was discovered by Ule on the right shore of the river San Francisco and is therefore known as San Francisco Maniçoba.

Following the above botanical descriptions is a table showing the exports of *Manihot* rubber from Brazil from 1903 to 1908; the later year showing the total as 2,166 tons, of which 1,249 tons were exported from Bahia.

The cultivation of *Manihot* rubber in various countries is next dealt with, German East Africa taking the first place as to extent of plantations and quantity exported. The variety most largely cultivated is *Manihot Glaziovii*, the development of which is chiefly due to the efforts of Herr Köhler, of the Lewa plantation, which contains some trees planted in 1893.

The author has dealt in an interesting chapter with the cul-

Nyassa, Zanzibar, Uganda and other countries. The other varieties of *Manihot* are likewise considered in a similar manner.

Apart from the question of distribution, the author has treated the preparation, coagulation, drying, smoking and washing of rubber, and the various forms of rubber testing. He has in-



A *Manihot* PLANTATION, 11 YEARS OLD, MUEHA (G. E. A.).

cluded statements of plantation costs and yields of the various descriptions of *Manihot* in different parts of the world.

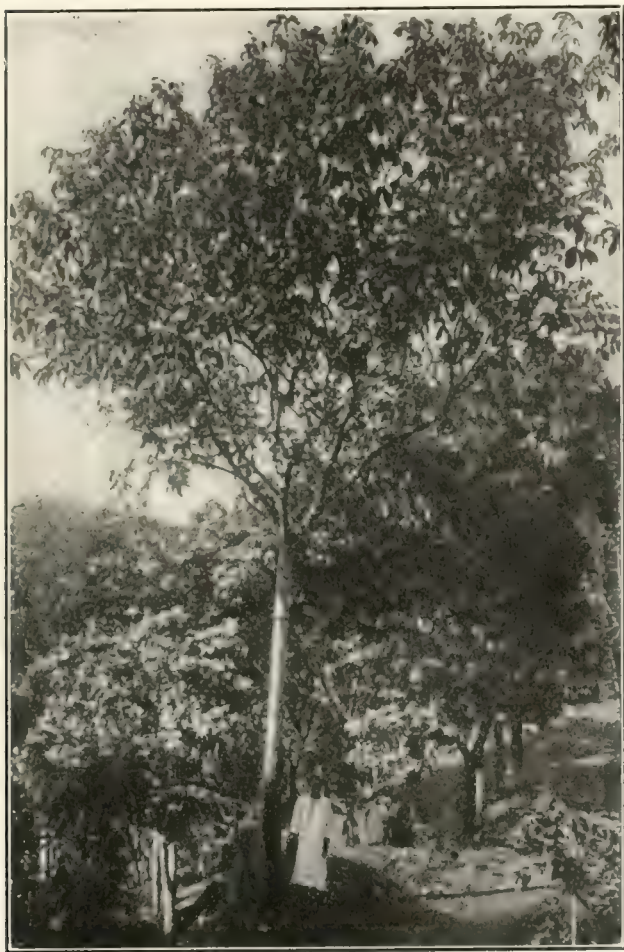
The text is supplemented by 149 well executed illustrations. Tho devoted to the subject of *Manihot*, the work contains much matter of general interest to the rubber expert and is one of the most valuable recent contributions to the technical literature bearing on that subject.

AMERICAN FLAGS AND COATS OF ARMS

The Pan American Union, of Washington, and the Pan American Society of the United States, located at New York, through John Barrett, director general of the Union, and Frederick Brown, secretary-treasurer of the Pan American Society, have issued a handsome little octavo bound in stiff board with leather back and corners, giving the flags and coats of arms of all the different American republics, starting with Argentina and Bolivia, and coming down to the United States, Uruguay and Venezuela. A whole page is devoted to each country. The flags and the coats of arms are reproduced in the proper colors, and it is altogether an effective and attractive book, valuable for the reference library.

BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

In the form of an interesting booklet (Miscellaneous Series—No. 8 C) the Bureau of Foreign and Domestic Commerce, Washington, D. C., has published an outline of the facilities afforded by this branch of the Department of Commerce for the development and extension of American exports. As it will be recalled, a corps of commercial agents of the bureau is employed in the investigation of trade conditions at home and abroad.



Manihot Glaziovii, 6½ YEARS OLD, AMANI (G. E. A.)

tivation of *Manihot Glaziovii* outside of German East Africa; particularly in Brazil, Colombia, Mexico, Trinidad, the Bahamas, Hawaii, South Sea Islands, Java, Sumatra, Formosa, Ceylon, India, Burmah, Soudan, British and Portuguese West Africa,

THE RUBBER TRADE IN BOSTON.

By Leslie C. Corbridge.

BOSTON is probably having its full share of what trade there is going, and is proportionally busy. The business of various lines of rubber manufacture is rather unequally divided; some producers of rubber goods are actively engaged, while others could handle more business. The clothing makers are particularly busy, with orders ahead; and the waterproof fabric makers are also running to large outputs. Some of the tire men report good business, but others are not enthusiastic over present conditions. The makers of hose and belting report trade good on the former and only moderate on the latter lines. Druggists' sundries are in good demand.

The footwear manufacturers in this vicinity have not been overburdened with orders, as the winter had been unusually mild and snowless until the middle of last month. The severe storms at that time started up the retail demand, but as most distributors, both wholesale and retail, were well stocked, the demand did not affect the manufacturers as much as they could wish. However, it enabled them to diminish the stock of floor goods holding in their warehouses.

* * *

Boston has a new mayor. The one who retired in January made for himself a wide reputation for tirelessness. He originated the phrase "Bigger, better, busier Boston." It is a handicap to any man to succeed such a hustler. But the new mayor is endeavoring to live up to the standard of his predecessor and "to go him one better," and his slogan is "Boom Boston." Therefore he is holding public meetings at which he appeals to business men to contribute to a fund to bring industries to Boston, by ways familiar to town-boomers.

As this journal has no partisan interest in booming any particular city, the above facts would have no place in these columns were it not for the fact that at one of the early meetings the mayor stated that he had received a letter from a gentleman well posted in the rubber business, who wrote that much of the crude rubber used in the various rubber industries was shipped from producing points in the far east and from South America to London and then reshipped to New York, and again to Boston. He believed there was a good reason for establishing a sort of central receiving station in Boston for this commodity, and for importing direct, thereby making a saving in commissions and freight of fully five cents a pound; advising that a committee be appointed to investigate the situation and report. At present writing no action has been taken on the matter.

* * *

In the Sunday "Herald" of the issues of February 15 and 22 appeared long interviews with Dr. Hamilton Rice, of this city, who has recently returned from the last of a series of expeditions to the wildest part of South America—the great divide which lies between the Amazon and the Orinoco River basins—mainly for scientific research. The account of his travels in the jungles, his trials and difficulties, and the indomitable spirit with which he overcame them, makes excellent reading, especially for those who know more or less about the difficulties of travel in the torrid wilderness and are posted on tropical vegetation, particularly rubber.

On his journey he was greatly helped by members of a community of rubber gatherers at San Jose, on the river of that name, at the juncture of the Guaviare River, who guided him to Calamar, 45 miles south, where he met the agent of the Colombian government, who had been sent there to investigate the condition of the Indian rubber gatherers. Through him Dr. Rice met Gregario Calderon, a pioneer in the rubber trade of that region, and who at one time was wealthy, but whose fortune was said to be lost through the trickery of men with whom he dealt. Calderon became his guide through the miles and

miles of dense thicket—encountering fever, hunger, mutiny, but pushing on until the headwaters of the Ajaju river were discovered and located, as well as the sources of several other rivers. That expedition lasted an entire year, and only whetted the doctor's appetite for adventure, for later he made another expedition along the other rivers of that region, and had even more startling adventures. However, he has returned safely, having accomplished much for science, for which he has received deserved recognition from the Royal Geographical Society and several other scientific associations. He lays much of his success to those engaged in rubber gathering in the wild regions he has traversed.

* * *

When Malden wants anything done the rubber men are called on to help. Just now a committee is carrying on a campaign against vice in that city. The committee in charge is under the chairmanship of E. F. Bickford, for many years in charge of the manufacturing of the Boston Rubber Shoe Co. So vigorous has been the work of this committee that the Board of Trade at one of its recent meetings declared that the city was being harmed by the circulation of exaggerated stories, and a committee was appointed to investigate that phase of the question, that committee including Walter E. Piper, superintendent of the Sells factory of the Boston Rubber Shoe Co., and ex-Mayor George H. Richards, who, it will be remembered, was for many years connected with that concern, during the life of Deacon Converse.

* * *

For many purposes rubber cement is a necessity, and a substitute would be hard to find. But it has its disadvantages. One of these is its inflammability. This cement is particularly useful in the repairing of leather as well as rubber shoes. One day last month H. Marcus, a retail shoe dealer, was using some cement in patching a pair of shoes. He slipped on a parlor match, and pouf!—he was instantly surrounded with flames from the vapor from the cement. Altho he got out of the affair with slight injury, the store was destroyed with a loss of \$4,000, and had it not been for a brick parti-wall, a moving picture theatre would also have been a total loss.

* * *

The Knight Tire & Rubber Co., of Canton, Ohio, has opened a branch at 153 Massachusetts avenue, under the management of P. P. Parker, for the sale and distribution of Knight tires in New England. This branch is reported as being equipped up to the highest standard and as enjoying excellent trade.

* * *

Judge Dodge, in the United States District Court in this city, recently sustained the indictment against Warren B. Wheeler, Stillman Shaw and G. Alden Whitman, charging them with fraudulent use of the mails in connection with sales of stock of the North American Rubber Co., which were promoted through Wheeler & Shaw, Incorporated, Whitman acting as sales manager.

The Apsley Rubber Co., of Hudson, is about to place on the market a new line of rubber boots and heavy overs—mainly miners' and lumbermen's boots—under the brand of "Rock-Hill." The company claims for this new line new compound, new construction and new process, and that the result is a line of footwear of remarkable wear resistance. For months these boots have been undergoing severe tests, being worn under the most adverse conditions, in mines, tunnel construction, in creameries, cold storage warehouses, ice cream factories, garages and in places paved with concrete; and all tests seem to substantiate the claim of extra wear, and to prove that the result of the long series of experiments and research has been a type of distinctly superior rubber footwear.

Replete with information for rubber manufacturers—Mr Pearson's "Crude Rubber and Compounding Ingredients."

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent

THE rubber industries in Akron are optimistic. The Miller, Firestone and Buckeye plants are running full force, and the other factories are taking on new men; but the reputation of the Akron factories for hiring all the labor they can get has invited to the city in search of employment a great number of people who, on account of the limited number required, have been disappointed.

A permit has been issued by the building department for the erection of another building by the Firestone Tire & Rubber Co. The new structure is to be 44 x 60 feet, of fireproof concrete and steel, and when completed will be equipped with apparatus for purifying and softening the water used by the company, before it goes into the boilers. It is to be situated near the railroad, in the rear of the present main buildings, and the cost is estimated at about \$5,000.

Literature recently distributed by the advertising department of this company describes the manufacture of pneumatic tires and inner tubes, as well as the solid rubber tire. A pneumatic tire casing is made up of fabric, beads, side walls, cushions, breaker strip and tread, and the importance of thorough inspection to see that each part is not only of itself perfect but that no flaws shall appear in the finished combination of the six parts, is dealt with in these instructive circulars. That inner tubes—which are subjected to great strain when inflated—should be of the highest quality of rubber and only the best of workmanship employed in their construction, and that proper tests be made to guard against leaks, air bubbles, imperfect joints, etc., is clearly explained, as well as the process by which these tubes are made. A later contribution goes into the details of the manufacture of the solid rubber tire, the gum as it comes from the calender being wrapped, layer on layer, directly on the rim on which it is to be used, the tire trimmed to the right shape when correct thickness has been reached, and then cured—after which the tread is cut by skilled workmen.

The sales force of this company is using especially attractive advance cards, the design of which is changed each month. The February number showed a portrait of Abraham Lincoln, combined with a calendar for the month, and a former issue showed a very clear and attractive photograph of the company's tire plant, with a smaller oval view of its rim factory.

The electric car which Chicago friends of Pope Pius have purchased for his use and are to present to him in March, will be equipped with Firestone tires.

* * *

Early in February 135 members of the Cleveland Engineering Co. visited the plant of the B. F. Goodrich Co. here, expressing at the termination of that visit appreciation of the courtesy extended by the company and of the extent and importance of the work being carried on.

This company has developed, after much study and experiment, a new tube, known as the Goodrich Indian Tube. This is said to be made of the cream of the finest rubber gathered by Indians native to the richest rubber country. It is brown in color, and tho only recently placed on the market, has met with exceptional favor and heavy demand.

* * *

One of the main reasons for the centralizing of the rubber industry in and about Akron is that the plants are practically at the door of the coal fields of Pennsylvania, Ohio and West Virginia, and that the Ohio canal, fed by the Portage system of lakes and reservoirs, furnishes ample water supply.

The Northern Ohio Power Co., which is closely affiliated with the Northern Ohio Traction & Light Co., has constructed at the

edge of Akron, along the Cuyahoga river, the largest hydro-electric plant between Niagara Falls and the Mississippi river—at a cost of over \$2,000,000. The drainage of the Cuyahoga river above this point covers a very large area. The dam at the breast is 66 feet high and somewhat over 120 yards wide. The sides are embedded in sandstone rock which forms the sides of



IRON CONDUIT BELOW CUYAHOGA DAM

the gorge of the Cuyahoga river. There are continuous riffles and falls below this dam, and a large iron conduit below the breast of the dam gives an additional fall of over 40 feet, making a total head of water of 106 feet.

This supplies motive power at minimum cost, and the B. F. Goodrich Co. is using power from this plant for its factory. The Firestone Tire & Rubber Co. is at present being connected and expects to use this electric power, but it has taken con-



PLANT OF THE NORTHERN OHIO POWER CO.

siderable time to lay the underground conduit for carrying the electric wires, which are placed under 22 parallel railroad tracks at considerable depth. The Goodyear Tire & Rubber Co. and the Miller Rubber Co. are also installing high tension wires to use this power. Notwithstanding that some of the factories have already installed their own electric plants, the cost of this power is found to be much less than that generated at their own plants.

* * *

During the first week in February more than 1,000 additional workmen were employed by the Goodyear Tire & Rubber Co. at its Akron factory, increasing the force to 6,000 men and the automobile tire output to 1,000 per day. This company's factory is capable of housing 10,000 men and of

turning out a yearly product of \$50,000,000. Statisticians of the company figure that tires to the value of \$125,000,000 should be sold in the United States this year, to equip the 1,125,000 automobiles now in operation, and this third shift of workmen has been added so that the orders falling to the company's share may be properly cared for, the factory being in constant operation night and day.

The Goodyear company believes in newspaper advertising, and in order to induce Goodyear dealers to advertise in their home town papers a special department has been established in the Akron general offices for the purpose of calling attention to the advantages of this form of publicity, as well as to write advertisements, prepare copy, supply cuts, and in any way possible assist the dealers in their individual advertising campaigns.

The "Safety First" campaign inaugurated by this company in November last is said to have been the means of decreasing the number of accidents in its plant by more than one-half.

* * *

On account of the similarity of its name to that of another local concern, the Rubber Goods Supply & Manufacturing Co. of this city has changed its name to the Excell Rubber Co.

The name of the Buckeye Rubber Co. has been changed to the Kelly-Springfield Tire Co.

The Industrial Workers of the World have expelled from membership in their organization, and the Socialists from their party, four men employed in local rubber shops, accusing them of being spies in the employ of the Corporations' Auxiliary Co., of Cleveland. Three of the men so accused are said to have at once left the city, the remaining worker appearing at the trial held by the Socialist party and denying the charge.

An ordinance recommending that the sale of rubber connections for gas stoves and flueless heating gas stoves be prevented is recommended by building inspectors of this city. While an ordinance is in force to prevent their use, inspectors believe that it will not be prevented while sales of this article are permitted to be made.

A large number of the cars entered for the Vanderbilt Cup Races started on Saturday, February 21, at Santa Monica, California, were equipped with tires of Akron manufacture, which stood the stress and strain excellently. The Grand Prize was awarded February 23.

The Lyons Rubber Co. has overhauled its plant and installed new machinery for the manufacture of a complete line of rubber sundries.

The Independent Rubber Co., a sales organization composed of Akron men, is handling a large part of the output of the Lyons company.

FORD COMPANY NOT TO BUILD A TIRE PLANT AT AKRON.

A widely circulated and recently published report to the effect that the Ford Motor Co. of Detroit had bought 40 acres of land just outside of Akron and intended to erect thereon a large plant for the manufacture of tires was the cause of considerable excitement in Akron rubber circles, the report appearing quite credible in view of the quantity of tires required to equip the annual output of this company and the general understanding that the Ford company has been planning for years to manufacture its own tires. In a letter to THE INDIA RUBBER WORLD under date of February 21, however, the Ford Motor Co. makes this statement: "There is absolutely no foundation to the rumor that this company is about to erect a tire plant in Akron."

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE RUBBER TRADE IN CHICAGO.

By a Regular Correspondent.

WITH the final arrival of cold weather, combined with plenty of rain, slush and snow, local dealers in rubber overshoes and raincoats have taken courage. Business in these departments of the rubber trade has shown a marked improvement since the beginning of the favorable weather. While the manufacturers and jobbers have noticed but little increase in business, dealers state that the people are buying well for the first time this year, and most all lines in the rubber business report larger sales for February than during the same month of last year. Goods are moving well and will probably continue to do so for some time, principally in size up and filling in lots to complete stocks in the hands of retailers.

* * *

W. E. Carver, manager of the Rubber Manufacturing & Distributing Co., 207 West Monroe street, said: "The humid weather has arrived just in time to save some of us fellows from getting disgusted with the rubber business. Never in the history of the trade in this section have we had more unfavorable weather than this year. The dealers are for the most part overstocked at the present time, but if this weather continues orders will be arriving in a satisfactory manner within a few weeks at the longest. However, none of the larger houses have been seriously alarmed, for we have come to know that in Chicago we always have a certain amount of weather each year during which the sale of our goods is assured. The people know, also, that they must have raincoats and rubber overshoes in a climate like this, and for that reason are seldom found without these articles in their wardrobe. The trouble is that they will not buy when the weather is cloudless, but show that they are human by waiting until the storm season comes, when they buy in droves. For that reason we have periods here when we are over our ears in the work of handling orders and then other seasons when we have nothing to do until tomorrow."

* * *

One of the features of the Automobile Show in Chicago, which recently passed into history, was the growing popularity and increasing variety of rough treads, as manifested in the tire displays. Many new patterns of anti-skid shoes have been put upon the market and accepted with favor by the public, which is plainly becoming more cautious in guarding against skidding, both by choosing rough tread tires and by the use of tire chains. One of the most interesting innovations which was seen at the Chicago show was the detachable or separate tread, which is so arranged that when it is put on the body of the tire and the tube inflated it practically forms one piece with the body. It is claimed for this device that it cuts the tire cost about in half, because the separate tread can be removed at any time, and as the tread is the part which receives most of the wear and tear, the body of the tire does not have to be renewed. In the ordinary tire, of course, when the tread is worn out or badly injured the entire shoe must be thrown away. One other novelty which attracted the crowds at the show was a combination pneumatic and cushion tire, in which the tread is much thicker than that ordinarily used and is cut and patterned so that it presents a sharp edge in any direction. It is said that this form combines the riding qualities of the pneumatic with the many advantages of the cushion tire.

* * *

The Knight Tire & Rubber Co., of Canton, Ohio, has opened a distributing branch here, at 2112 South Michigan avenue, to take care of its trade in the Middle West. This branch will be managed by E. C. Merkle, who was formerly

connected with the Excelsior General Supply Co., of this city, and who put Knight tires on the market in Chicago for this concern.

At the annual meeting of the stockholders and directors of W. H. Salisbury & Co., 107 South Wabash avenue, which was held February 3, all of last year's officers were re-elected. They are: President, C. R. Blanchard; vice-president and treasurer, M. F. Salisbury; secretary, Richard H. Geier. The usual 6 per cent. dividend was declared. Last year was a satisfactory one, according to the secretary's report.

* * *

One of the schools of automobile instruction recently conducted a class of twenty-six men through the repair department of the Goodrich company's Chicago branch to witness practical demonstrations in tire repairs. These demonstrations took in every operation in the repair of a tire shoe, from cutting away of the old rubber and worn out fabric to the application of the new material and the final cure in the vulcanizer, and were supplemented by a talk by the head of the department on tire abuses, after which questions were asked and answered and a set of illustrated pamphlets on the care of tires, issued by the Goodrich company, was presented to each member of the class.

* * *

The subject of the Lincoln Highway is one especially interesting to the tire trade, as the carrying out of the project for a system of good roads across the entire continent could not fail to tempt the automobilist to greater use of his car and consequently more extended use of tires. At present the Chicago newspapers are besieged with questions concerning this highway and if questions may be used as a measure of interest, the highway without a doubt will prove the most popular of all tourist roads. Many tourists coming from the west have been heard to remark, "Yes, I enjoyed my trip through the several states, but from Iowa to Chicago I was more than pleased with the markings on the telegraph poles, placed there by the order of the officers of the Trans-continental Highway Association. Not once did I find it necessary to look at my route book or inquire my way. A complete trans-continental system thus marked would be ideal."

The dream of such an ideal system is about to be realized in the Lincoln Highway. By the time the auto season opens the entire route, from coast to coast, will be marked with the association's letter L, between bands of blue and red—generally on telephone or telegraph poles.

There has been much curiosity manifested concerning the identity of the originator of this scheme. Carl G. Fisher, of Indianapolis, head of the motor speedway, was the originator of the Lincoln Highway project, and the Lincoln Highway Association was later formed and now has offices in Detroit.

The Highway Commissioners' Good Roads Association of Cook County (in which Chicago is situated), the organization which grew out of the convention called last December by the country members of Cook County Board, played its first part in the development of the good roads movement in the county February 13, when it entertained at a banquet the delegates to the National Conference on Concrete Road Building. This national conference was held in Chicago February 14-17, the first day being given to the Cook County organization with a view to increasing local interest in the subject of hard roads.

The following is a brief outline of the present county road system and the plan proposed for its development: There are 1,300 miles of country roads in Cook county, 325 miles being old state roads extending in all directions from Chicago. The commission claims that these 325 miles constitute a sufficient road system, 90 per cent. of the rural population

being located either directly on one of these roads or within one mile of the system. A road having a harder surface, of either brick or concrete, is advocated, the ordinary macadam or gravel road having proved unable to stand up under the automobile traffic of today, and heavy travel, including large motor trucks, is bound to increase. The width of the road advocated is from 18 to 24 feet, and the estimated cost is from \$12,000 to \$18,000 per mile, the total 325 miles approximating \$4,000,000.

The program advanced by the association proposes the study of scientific building and maintenance of roads, the efficient and economic expenditure of all funds devoted to the construction, repair and maintenance of country roads, and the establishment of a fixed plan of building a system of permanent roads throughout the country towns of the county.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent

THE rubber business throughout the state is showing a general improvement and all of the plants are receiving more orders than a month ago. The reports all show that the outlook is much improved. The factories, as a rule, are working full time, and some are operating certain departments on overtime schedules.

The manufacturers of automobile tires report orders that will soon have their factories working up to the mark which was set in the summer and fall of last year.

The reduction in prices of footwear by the United States Rubber Co. together with the advent of snow, ice and bad weather conditions during the past month had a stimulating effect upon this line of trade.

* * *

Plans for the erection of a new dairy barn to cost \$50,000 on the farm of Col. Samuel P. Colt, president of the United States Rubber Co. on Papoosesquaw Point at Bristol, have been completed and work on the structure will be commenced as soon as the spring opens. It will be finished on the interior in white enamel brick, four feet from the concrete floor, and above that the walls will be of plaster. It will contain sixty stalls for milch cows with additional boxes for young stock and bulls.

* * *

Clarence H. Broley, George Kirk, Elizabeth E. Broley and Mark Kirk are the incorporators of the Cataract Tire & Garage Co., a concern which is authorized to carry on a general automobile business in Providence with a capital stock of \$20,000.

* * *

The plan of working a five-day-a-week and four-day-a-week schedule alternately has been abandoned by the Alice Mill of the Woonsocket Rubber Co., and instead a five-day week is now being followed. It is reported, however, that prospects look more satisfactory and that full time may be resumed at an early date.

* * *

The Goodby-Rankin Co. was incorporated under the laws of Rhode Island early in February with a capital stock of \$40,000 to deal in automobile supplies and automobiles. The incorporators are Albert E. Goodby, who started in the bicycle business in Providence in 1893 and who has auto. supplies stores on Washington street and Prairie avenue; William G. Rankin, for the past 12 years in charge of the automobile supplies department of the Belcher & Loomis Hardware Co., and Thomas P. Himes, of Cranston.

* * *

The Cataract Rubber Co. has removed its salesrooms from 200 Washington street to more commodious quarters at 69 Broad street, Providence.

The salesrooms of the Decker Rubber Co. have been removed

from 105 Weybosset street to a larger store at 76 Weybosset street, Providence.

Walter Herman, who has been superintendent of the Revere Rubber Co. for several years past, has severed his connection with that concern and is taking a much needed rest from business activities.

THE RUBBER TRADE IN TRENTON.

The Rubber World correspondent.

THE Burman & Gedney rubber factory on Enterprise avenue was damaged by fire on February 13 to the extent of \$7,000, the second and third stories of the building being completely destroyed. The fire—which is of unknown origin, but is supposed to have been the work of an incendiary—started in the rear of the second floor, being discovered by the night watchman, who lives in an apartment adjoining the factory. The severity of the weather hampered the work of the firemen, four companies of whom responded to the alarm. Rubber specialties were manufactured at this plant, and plans were under consideration by the company for extension.

A fire also occurred recently in the plant of L. Albert & Sons, scrap rubber dealers located at North Olden avenue and the Pennsylvania railroad. Besides the damage done to the building—which was considerable—the loss entailed by the destruction of scrap rubber amounted to upwards of \$15,000. This building was at one time occupied by the Ajax-Grieb Rubber Co. of this city.

The Globe Tire & Rubber Co. has closed arrangements whereby it will be represented in the eastern territory by the Meeley Rubber Co., with headquarters at 660 North Broad street, Philadelphia. The Globe tire is a comparatively new product, but it represents the result of the experience and experiments of men long identified with the production of tires, and it is said by experts to possess unusual merit.

The old Buckthorn wire mill of the John A. Roebling's Sons Co., formerly located at the foot of Wolverton avenue, this city, has been removed to the wire plant of the company at Roebling. The working force at this plant numbers about 100.

* * *

Wm. R. Thropp & Sons Co., manufacturers of rubber mill and other machinery, are erecting a new factory building on New York avenue, Trenton, for the pulverizing of flint and spar for the use of potters and tile manufacturers. The company will manufacture all of the machinery required for this new plant, much of which will be of special design. The plot on which the factory will be situated is 500 feet in length, with an average depth of 200 feet, and switches from the Philadelphia & Reading and Pennsylvania railroads lead directly to the plant. Thomas H. Thropp, formerly president and general manager of the Wm. R. Thropp & Sons Co., was one of the founders of the Eureka Flint & Spar Co., of Trenton, and is considered an expert in the flint and spar business.

Jos. Allibone, employed for 26 years in the machine shop of the Thropp company, died on February 6, following a stroke of apoplexy, at the age of 78 years.

A large iron sign has been placed at State and Calhoun streets for the direction of motorists from Pennsylvania to the Lincoln Highway through Trenton. While the Mercer County Automobile Club is directly responsible for the erection of this sign, several of the Traction companies—which have found similar signs in other parts of the city a great aid to motorists—have lent their aid to the project, the New Jersey & Pennsylvania Traction Co. doing the wiring and

providing the power for electric illumination at night, and the Trenton & Mercer County Traction Co. granting the use of one of its poles for the background of the sign.

The Spartan Rubber Co., of this city, has opened a branch at 715 Boylston street, Boston, Massachusetts, of which F. C. Steison has been appointed manager.

* * *

The Manhattan Rubber Manufacturing Co., of Passaic, has joined the Association of Corporation Schools and has enlarged one of its smaller buildings, arranging it for use as an auditorium, where instruction is given twice a week to apprentices, office boys and girls, and even to adults, who wish to acquire a better knowledge of the rubber industry. This instruction includes lectures, which are illustrated by the use of lantern slides showing all the various operations in connection with the cultivation, collection, preparation and manufacture of rubber into mechanical goods as produced by this company.

RUBBER NOTES FROM CALIFORNIA:

THE B. F. Wade Tire & Rubber Co., located at 512 West 8th street, Los Angeles, announces having made arrangements for exclusive representation of the Dayton Airless tire in this territory. This tire, which is of the cellular type of construction and is made by the Dayton Rubber Manufacturing Co., of Dayton, Ohio, has been on the eastern market for three years, where it is now well established. The Wade company, as mentioned last month, also represents the Tyer Rubber Co., of Andover, Massachusetts, in southern California, and large shipments of both brands of tires have recently been received at the company's sales rooms.

The installation of machinery now being made at the plant of the Hendrie Rubber Co. at Torrance will enable this company to double its output and will necessitate additions to the working force. A new drying room is also being added, which will greatly facilitate production. The cost of this addition, with the new vulcanizers and tire making machines, is estimated at close to \$50,000.

A plan is now under way for the erection by eastern capitalists of an automobile factory at Torrance for the manufacture of a strictly southern California car, and the Hendrie Rubber Co. expects to secure a contract for the tire and rubber equipment for these cars, this expectation being largely responsible for the extensions and additions being made.

Users of Hendrie tires are being provided with passes which will enable them to visit the factory and see just how the tire is built, as well as the quality of the articles entering into its construction, at the same time receiving advice on the proper care and use of tires so that trouble can be eliminated and efficiency increased.

Plans are being considered for the erection of a factory at San Jacinto in which are to be assembled eastern made parts of the new Crosson spring wheel. It is said that some of the large tire concerns have made bids for the patent on this wheel, and that its introduction is sure to revolutionize the tire business. W. H. Sanders is one of the promoters of the new enterprise.

The popularity of the toy balloon as a means of entertaining the juvenile members of a household has led to the adoption of this article by certain dealers in children's footwear as a souvenir to be given to each purchaser of a pair of shoes. Each rubber balloon is imprinted with the name and address of the firm presenting it, the manager of which expresses his belief in the effectiveness of this form of advertising, when judiciously handled.

HOMES FOR FACTORY WORKERS.

SO keen is the industrial competition in this country at the present time that any detail that will increase the extent or the quality of production is considered of prime importance, and not the least important of these details is the



GOODYEAR COMMUNITY HOME.

efficiency of the workers. Employers of labor, appreciating this fact, are giving more and more attention to the conditions surrounding their employes, and, believing that the necessary investment of capital required to improve home conditions will yield profitable dividends in increased efficiency and interest on the part of the workers, several large industrial enterprises have of late been interesting themselves in the erection of houses for occupancy by their factory workers. On page 129 of our December issue mention was made of the work in this direction being carried on by the Goodyear Tire & Rubber Co., at Akron, Ohio; and the



ANOTHER STYLE OF GOODYEAR HOME

above illustrations are representative of the one hundred houses already completed in the "Goodyear Home Community," and which may be purchased from the company by its employes at actual cost, on the basis of monthly rental.

The following street view pictures some of the dwellings recently erected by the John A. Roebling's Sons Co., manufacturers of rubber-covered and other wires, etc., in the village of Roebling, New Jersey, where a tract of 237 acres in the vicinity of the company's new rolling mills has been purchased and is being transformed into a city of homes, with parks and all the up-to-date city comforts. These are six-room double brick houses, with bath and shed extension, finished attic, steam heat and gas, and are designed for occupancy by the company's machinists and other workers at a rent of \$13 a month for each side. Other houses of superior construction, nine-room double brick, with bath room, laundry in cellar, steam heat and electric lights, are also provided,

at a rental of \$22 a month. The company is frank in disclaiming any altruistic motive in the erection of these dwellings, the location of this particular site for the extension of its plant making it seem advisable to provide proper nearby homes for its workers at a rent which will yield a fair interest on the investment in houses and their surroundings; while the company's store and other of the village improvements, tho not conducted for the purpose of making a profit, will



DWELLINGS ERECTED BY ROEBLING'S SONS CO.

be run on the same business principles which characterize the entire enterprise and which enable the occupants of the dwellings to feel that spirit of independence without which the project could not in their interest be considered a success.

THE ADVANTAGE OF NET PRICES THAT ARE NET.

The rubber department of the Hamilton Brown Shoe Co. is a strong believer in net price lists that really give net prices, as distinguished from net price lists from which various discounts are to be taken before the real, final absolute net is arrived at. A circular sent out by this company to the retail trade contains the following paragraphs on this subject:

"For years it seems to have been the policy of the majority of wholesale firms offering rubber footwear for sale, to put out price lists subject to various discounts, and thus to confuse the minds of the retailers until the majority really never know just when they have secured the right prices on their purchases.

"In rubber footwear there are five grades of quality: Two First Grades—a Standard First, and a Differential First, which is five per cent. cheaper in price than the Standard; two Second Grades—a Standard Second Grade, and a Differential Second Grade, which is five per cent. cheaper in price than the Standard; then a Third Grade.

"Many firms get out price lists showing Standard Grades at prices that are marked up five per cent. and then they offer the merchants a five per cent. trade discount. This discount sounds good to the buyers and many of them buy without thinking to examine the prices shown on the list, which prices are five per cent. higher than the regular net prices shown by firms following the no-discount policy. Then, other firms carry the Differential lines which are five per cent. cheaper in both quality and price than the Standard grades, and so they put out their price lists with prices marked up five and five per cent. and then offer these two fives as discounts to the merchants. These discounts (five and five per cent.) sound still better, but are they? Most emphatically they are not. They are merely the taking-off of that which has previously been put on!

"Make every salesman who tries to sell you rubber goods name his lowest, net cash, no-discount prices, payable December 1, for then, and then only, can you know just exactly what you are paying."

NEW TRADE PUBLICATIONS.

ELBERT HUBBARD PHILOSOPHIZES ON THE REPUBLIC CLUB HOUSE.

WHEN Elbert Hubbard finds a subject that necessitates the introduction of sonnets, and compels him to draw deep draughts from his intimate knowledge of Plato, Aristotle, Emerson and Herbert Spencer, he evidently has struck quite a theme. But all these things he does in a little book entitled "Opportunity—Being a Little Journey to the Republic Clubhouse," in which he describes, with that descriptive ability that belongs peculiarly to him, the new clubhouse recently opened in Youngstown, Ohio, by the Republic Rubber Co. It is hardly necessary to make any extended reference in these columns to this clubhouse, as it was illustrated in the February number of *THE INDIA RUBBER WORLD*, and has been described in earlier issues, but Mr. Hubbard has written a very interesting little story about this new phase of industrial development. Anybody who would like to see how a literary man treats a commercial topic ought to write for a copy of "Opportunity."

THE DIAMOND BRAND OF RUBBERS

The Diamond Rubber Co., of Akron, Ohio, has hitherto been chiefly associated in the public mind with the manufacture of tires and mechanical goods, but a 48-page catalog recently issued by that company entitled "Diamond Brand Footwear" shows that the company is making rubber boots and shoes on a very comprehensive scale. This catalog shows certain lines that are not to be duplicated elsewhere, as, for instance, the "White Diamond Line," including boots, lumbermen's and combinations, made in pure white color. Another innovation is a line of boots and lumbermen's in dark brown. This is called the "Tobasco" line. The catalog is well illustrated and contains a full description of the Diamond footwear line.

"EXTRA SERVICE."

This bright and breezy monthly publication (in its fourth number) is avowedly published in the interest of every Federal Rubber Manufacturing Co. employé. An interesting summary of "Plantation Rubbers of Today," from the pen of Mr. K. J. Thompson, effectively opens the number, containing much information of interest to rubber mill employés on the cultivation and preparation of plantation rubber. Among other articles is a discussion of the labor situation in Akron, in comparison with which the Federal company is faring extremely well, its schedule steadily increasing each week.

The personal element is strong in this interesting publication, which is replete with local references, some of an obviously satirical nature.

GOODYEAR MECHANICAL RUBBER GOODS.

That uniform reliability characterizes the mechanical rubber goods of the Goodyear Tire & Rubber Co., of Akron, is the keynote of the attractive catalog lately issued by that department, classified into belting, hose, packing, tiling, matting, etc. The first section gives full descriptions of the eight standard brands of rubber belting, while the exceptional merits of Goodyear balata belting are explained in detail, followed by particulars as to oil well and conveyor belting. Next in order come the price list of "Kant Kink" hose, and a general price list of hose, followed by special lists of acid, water and suction hose, and details of the application of various other descriptions. Special prominence is given to garden hose.

The completeness of the line of Goodyear hose is emphasized by the fact of its occupying about 40 pages, or nearly half the catalog; while a third section deals with the well known Goodyear packing.

In view of the interest now being taken in rubber floorings, the details of interlocking rubber tiling, which, it is claimed, outlasts marble, will be appreciated. The descriptions of Goodyear perforated mats will also be found useful.

Among the attractions of the catalog is the number of artistic illustrations by which the text is supplemented, including a two-page cut showing the entire plant.

THE GOULD COMMERCIAL CO. ANNUAL STATISTICS.

With its accustomed regularity, the valuable annual statistical circular of the above company for 1913 has appeared. The tables show the world's total imports as 101,160 tons, against 97,950 for the preceding year, while deliveries to consumption represented 100,535 tons, as compared with 95,204 in 1912. Deliveries included: Paras, 40,216 tons, against 43,052; Plantation, 45,216, against 27,070, and Miscellaneous, 15,103 tons, against 25,082.

From the above figures it will be seen that the falling off in miscellaneous descriptions (chiefly wild rubber) was more than offset by the large increase in plantation rubber. As to wild rubber it is remarked that Anglo-Saxon mercantile sagacity had been displayed in starting rubber plantations. Brazil and other wild sections would never have been able to cope with the sudden great demand for rubber tires. The opinion is expressed that the shipments of wild rubber will probably not cease altogether, but will be largely succeeded by plantation rubber from the same sections.

According to the tables there was an increase of consumption of about 5 per cent. between 1912 and 1913; a 10 per cent. further increase in quantity being regarded as a liberal estimate for 1914.

Heavy reductions in the cost of plantation rubber are anticipated, until prices in the East and in other sections harmonize. It is estimated that a saving of 50 per cent. can be effected in the production of rubber in sections at present wild. The usual chart of movements of prices serves to enhance the value of the tables.

THE WORLD'S RUBBER POSITION.

In a useful little hand book entitled "The World's Rubber Position," published monthly by W. H. Rickinson & Son, of London, there are gathered a number of interesting statistical tables, as nearly up to date as possible, showing the movements of rubber at various important centers of the world's trade. Another feature of interest is the table with the imports and exports of the leading European countries. The work has evidently been compiled with much care, and reflects credit on its authors.

CALENDARS AND SOUVENIRS.

THE FIRESTONE COMPANY ISSUES A FINE CALENDAR.

THE Firestone Tire & Rubber Co., Akron, has sent out a handsome calendar, which differs from the ordinary offering of that sort in that it begins with February, 1914, and ends with February, 1915. That is one difference. Another lies in the artistic character of this calendar. It consists of four different leaves, each leaf being ornamented with a colored panel about 10 inches square. These panels were all painted by Mr. E. W. Pirson, an artist of repute. The first panel shows a comely young woman clad in an ermine coat leaving an electric car, with a city background suited to the subject. The second panel is distinctively spring-like. A touring car has stopped under a tree—presumably an apple tree—while the occupants are busy helping themselves to the blossoms—a very pretty suburban scene. The third panel shows a pair of high-stepping bays drawing a trim drag, with a millionaire's country palace in the immediate background; while the fourth panel has caught a heavy-laden truck in the act of making a steep ascent to the roadway from the dock. These four panels show four different tires, viz., the cushion electric, the pneumatic, the carriage and the truck. It is altogether an artistic piece of work.

The Katzenbach & Bullock Co., dealers in chemicals and colors, with offices in New York and works in Trenton, New Jersey, have favored some of their friends with a solid brass letter-opener bearing their trade mark and name enameled in black and red.

New Rubber Goods in the Market.

A WATERPROOF COAT FOR THE HORSEMAN.

AN English manufacturer of high grade rubber garments has designed a waterproof coat which is described by one keen horseman as "the only waterproof I know of which will really keep a man dry in the saddle throughout a heavy and continuous downpour." This coat, which on ordinary occasions has the appearance of a raincoat of customary design, is provided with an apron buttoning on one side, as shown in the illustration, which will completely protect a rider from waist to mid-calf. When not in use this apron is fastened out of sight on the inside of the coat. [J. C. Cording & Co., 19 Piccadilly, London, W., England.]



THE "EQUITOR" RIDING COAT.

SOFT RUBBER WEEDLESS BAIT.

Every fisherman appreciates the advantages of a hook that can be artfully and temptingly cast into and drawn through weeds and snaggy places where the "big ones" conceal themselves. The inadequacy of the ordinary fishhook in this respect, and its tendency to collect weeds, etc., is ascribed as the reason why the average catch contains so large a proportion of the small fry. This excuse, however, will no longer be accepted, for it is now possible to secure a "Weedless Fish Nipple," as illustrated herewith—made of soft rubber, which protects the hooks in the direction in which the line is being drawn and yet when struck will collapse and allow them to penetrate so that the fish cannot free itself. This bait is made in correct casting weight, is steered by the balanced weight and can be let down to any desired depth—regulated by reeling or trolling—for deep water fishing. It is made in white and in red. [The Moonlight Bait Co., Paw Paw, Michigan.]



RUBBER FASTENERS FOR AVIATORS.

Aviation is decidedly a hazardous calling. It not only has its ups and downs but its multitudinous jars and jolts. To minimize the latter as far as possible, somebody has invented a belt to fasten the airman to the seat. It has a wide piece of leather in front and fastenings at the side, from which strong, elastic rubber cords extend to the back of the seat. If the craft strikes the earth with too much of a shock, the airman, instead of being thrown from his seat, is thrown forward and then pulled back again by the rubber cords.

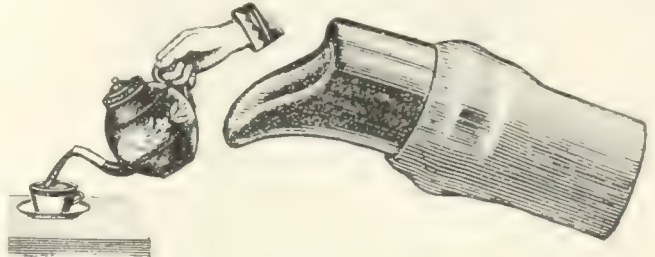
A NEW TIRE REPAIR PATCH.

An invention which will save motorists a great deal of time and annoyance has just been placed on the market. The device is shown in an accompanying illustration and consists of a new form of cementless tube patch. Formerly many patches were often ruined in the effort to remove the muslin protector with which the patches are lined. There was no way by which the fabric could be gripped and taken off. The fabric protector of this new patch, however, is provided with a projection which extends beyond the circumference of the rubber. With a simple pull the muslin can be removed and the patch is ready for use. [The Firestone Tire & Rubber Co., Akron, Ohio.]



A RUBBER SPOUT FOR THE TEA OR COFFEE POT.

A method has been devised—and in every well-regulated household the means should soon be at hand—for relieving the distress of the domestic genius who sees the spout of her favorite tea or coffee pot either broken off or hopelessly chipped. A rubber nozzle, as shown in the accompanying illustrations, has appeared



ALL RUBBER SPOUT.

RUBBER AND PORCELAIN.

on the market for the relief of such situations. It is made of a high quality of rubber, which imparts neither flavor nor odor to the tea; and it may be had in two sizes—the smaller being of rubber alone, for use on a chipped-lip spout; the larger, consisting of a rubber tube with porcelain lip, for the repair of a broken spout. The trade name of this nozzle, "Mandarin," has been duly registered.

PROTECTING THE DISHES FROM THE FAUCET.

A Philadelphia housewife with an eye to preserving her dishes from destruction has devised a simple bumper to put about the faucet so that dishes coming in contact with it in the sink will be uninjured. She took a heel from an old rubber boot, cut a hole of the proper size in it with a chisel and a hammer, and pushed it up around the end of the faucet; and now the hired girl can throw the china against it with perfect impunity. If there didn't happen to be a pair of old rubber boots in the house the same purpose could be fairly well effected by taking an old rubber shoe or any other piece of rubber, cutting out a strip of sufficient length and winding that around the end of the faucet.

RUBBER ICE BAG WITH TEXTILE LINING.

A new form of ice bag has an internal textile lining which is imbedded in the sheet of rubber, without the use of adhesive substances, in such a manner that the meshes of the tissue are filled with rubber, while the design appears on the outside. In this way a perfectly homogeneous material results from the union of the rubber and the fabric, so that the advantages of a rubber ice bag are combined with those of one composed of fabric. [Gummiwarenfabrik, M. Steinberg, Köln-Lindenthal, Germany.]

The Obituary Record.

DR. JACQUES HUBER

WORD has been received by cable of the death at Pará on February 18 of Dr. Jacques Huber, Director of the Goeldi Museum and Botanical Garden of that city. No details are given beyond the bare announcement of this most regrettable event, which will mean such a loss to the rubber-growing world of South America.

Dr. Huber was a fine representative of the German element



DR. JACQUES HUBER

which for many years has been so dominant in Brazil and has contributed so many leaders in the development of the great South American republic—another representative being Dr. Lauro Muller, who was sent to the United States last June on a special embassy by his country.

Dr. Huber was for many years the director of the famous botanical museum in Pará, and he was considered not only the foremost authority on the scientific aspects of rubber growing in the Amazon valley but was perhaps more active than any other official in the attempt to reduce the wild chaos of Amazon rubber production to some semblance of order and organization so that it could meet the constantly growing rivalry of the Far East.

In the issue of THE INDIA RUBBER WORLD of January, 1898—over 16 years ago—there appeared a translation of a lecture which Dr. Huber had just delivered in the Pará museum; and from that time to the present his name has appeared very frequently in these columns and many references have been made to the work of South American rubber development in which he was so diligently engaged. He will be remembered by many Americans because of the extremely able and interesting paper which he read at the Rubber Conference in New York in September, 1912, on "The Present and Future of the Native *Hevea* Rubber Industry in Brazil." It was a comprehensive address and gave his hearers a better idea than they had ever had before of the problem that the rubber interests of Brazil were called upon to solve. He was also one of the principal speakers at the banquet held at the conclusion of the Rubber Exposition that took place jointly with the conference.

In the spring of 1912, as a member of what was known as the Akers Commission, he made an extended visit to the eastern plantations and was received everywhere with distinguished

courtesy. On his return to Pará he published a book giving probably the best comparative survey of the rubber situation in the Amazon and in the East that had ever been attempted. His position was such an eminent one in the world of Amazon rubber production that his loss to that interest appears irreplaceable.

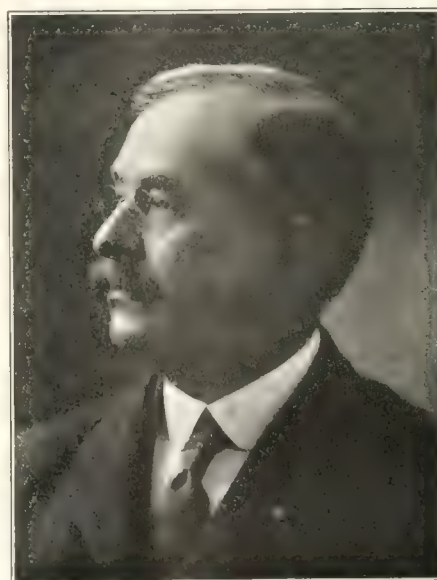
Personally, he was a delightful man, most modest and unassuming, notwithstanding his acknowledged scholarship and scientific attainments. He had many friends in the United States and in Europe and in the Far and Middle East. In fact, his acquaintance extended to every continent, wherever men are interested in any phase of rubber—and his death will be widely lamented.

GEORGE P. WHITMORE.

George P. Whitmore, for many years one of the prominent figures in the New England rubber trade, died at his residence in West Newton, Massachusetts, on February 22, after an illness of nearly a year. He was born in Boston, November 21, 1849, and after graduating from the public schools went into business at an early age. He was associated with the Boston Belting Co. for 30 years, for the greater part of that time being the secretary of the company. About five years ago he left this position to become identified with the Revere Rubber Co., of Chelsea, Massachusetts.

He was one of the active organizers of the New England Rubber Club in 1900 and was its first treasurer, an onerous position which he held most acceptably for a number of years. He was also very active and prominent in Masonic circles, having been District Deputy, Grand Master and Past Master of Dalhousie Lodge, and was for many years president of the Masonic Hall Association of Boston. He was married in 1877 to Miss Alice Eaton, of Hamilton, Ontario, who, with a daughter and two sons, survives him.

A testimonial which was presented to him by his fellow club



GEORGE P. WHITMORE.

members when he resigned the position of treasurer in the rubber club so fittingly expresses the esteem in which he was held, not only in this club but in the trade generally, that it may with propriety be quoted here: "By his genial presence, sane counsel, modest manner and self-sacrificing attention to detail, he has won the respect and love of all."

CLINTON VAN VLIET.

Clinton Van Vliet, president of Goodyear's India Rubber Selling Co., died in Flushing Hospital, Flushing, Long Island, on February 6, under circumstances that were not only exceptionally distressing, but so unusual as to attract wide attention.

Early in January he was attacked with what he believed to be indigestion. His doctor diagnosed it, however, as appendicitis. Mr. Van Vliet assured him that this was impossible, as some three and a half years ago, being attacked by appendicitis, he had undergone an operation at the hands of two famous New York surgeons and on his recovery had paid them a large amount for removing his appendix. His friends will remember the long siege that he passed through at that time—after he had



CLINTON VAN VLIET

been under the surgeon's knife—which kept him away from his business duties for many months. His doctor, however, was insistent that his diagnosis was correct; accordingly on January 18 an operation was performed and the appendix removed. But at Mr. Van Vliet's age—69 years—he was not able to rally from the shock, and some days later it was noticed that gangrene had set in in one of his legs, owing to congestion of the blood. On February 2 a second operation—amputating his left leg—was performed. He survived this but a few days, passing away on February 6.

In the death of Mr. Van Vliet, the rubber industry has lost one of its ablest men and most successful members. Below is a brief resumé of his life, as given by one of his business associates for nearly forty-four years:

Mr. Van Vliet was born in Plainfield, New Jersey, on August 20, 1844, and was imbued with that good old Holland blood which has given to the world a host of sturdy men and women. He was educated in the public schools of his native town, from which he graduated with high honors. His first entry into business life was with a flour commission firm in New York City, but seeing a better chance to advance himself, he became cashier and office manager of an old-established carriage and wagon firm, with which he remained several years. In the fall of 1870, he entered the service, as office manager, of Goodyear's India Rubber Glove Mfg. Co., whose offices and stores were then situated at Nos. 205 Broadway and 164 to 166 Fulton street., New York City. His ability was early recognized, and upon the death of the treasurer he was made acting treasurer and general manager, the firm in the meantime having removed to Nos. 503

and 505 Broadway. A little later he was elected treasurer and general manager, and when the business of the firm was merged into the United States Rubber Co., he was retained in those positions and still held them at the time of his death. He also was elected president and treasurer of the Goodyear's India Rubber Selling Co., one of the subsidiary branches of the United States Rubber Co.

Mr. Van Vliet's characteristics were, a strict adherence to the routine of business life, an unflagging energy in the advancement of the interests of his company, and a remarkable intuitive way of solving quickly many of the perplexities incident to business affairs. His decisions were final, because they invariably were proven correct and for the best interests of all concerned.

While a keen man of business, he was withal a man who substantially helped many who were less fortunate in their daily life, even tho knowing that his efforts would meet with no reward except in the feeling that he was doing good. A quiet man, avoiding all that was spectacular, not given to self-assertiveness, tho of exceptional ability; loyal, helpful, universally respected, and by those whose lives touched his most closely much beloved.

HENRY G. COOKE.

The extreme winter weather that swept down on New York so suddenly in the second week of February brought many casualties and not a few fatalities in its wake—among them the death of Henry G. Cooke, for the past 19 years manager of the stock transfer department of the United States Rubber Co., who fell on an icy sidewalk on February 14, sustaining a fracture of the skull, from which he died on the 18th.

Mr. Cooke was 58 years of age and had spent practically his whole life in New York City, residing during his last few years at 2469 Broadway. His earlier business career was associated with Phelps Bro. & Co., steamship agents. In 1895 he left his position with that concern to join the United States Rubber Co., where he was soon put in charge of the stock transfers, holding that position to the time of his death. His association with these two companies covered his entire business career of nearly 40 years. He was a veteran of the Twenty-third Regiment of New York and was quite prominently identified with the Masons. His position in the United States Rubber Co. brought him in contact with the representatives of the financial interests and he had a wide acquaintance throughout the Wall street district. Among his associates in the rubber company he was held in the highest esteem.

MRS. F. M. SHEPARD.

Mrs. Frederick M. Shepard died at her home in East Orange, New Jersey, on February 18, in her eighty-second year, from a complication of diseases. She had, in fact, never recovered from the shock occasioned by the death of her husband last June. Mr. Shepard, as is known by everyone familiar with the rubber trade, was very prominent in that industry for over 60 years, having been president of the Goodyear Rubber Co. during the greater part of his life, and president of the United States Rubber Co. for a period of five years.

Mrs. Shepard is survived by five children, viz.—Frederick M. Shepard, Junior, John A. Shepard, Miss Annie R. Shepard, Miss Edith M. Shepard and Mrs. Alfred Boote—all of East Orange.

BEQUESTS IN MR. LEWIS' WILL.

The late George A. Lewis, president of the Beacon Falls Rubber Shoe Co., left the larger part of his estate to his family, but his will contained a certain number of specific bequests, as follows: \$10,000 to the First Congregational Church of Naugatuck, Connecticut; \$5,000 to the Grove Cemetery Association of that city; \$1,000 each to his coachman, his gardener and a woman servant who had officiated in his home for a number of years, and a bequest of \$500 to his chauffeur.

News of the American Rubber Trade.

THE TRED-LITE HEEL WILL BE KNOWN AS THE ESSEX

THE Essex Rubber Co., of Trenton, New Jersey, has been manufacturing for some time a rubber heel known as the "Tred-Lite." This heel has been very successful and has reached a large sale, but the company has concluded—wisely, it would appear to the average man—to subordinate the word "Tred-Lite" and lay chief emphasis on the name "Essex" and the trade-mark "S X," which appear on the greater part of the goods sent out by this company, and which are consequently widely known in the trade. So the "Tred-Lite" will hereafter be known simply as the Essex heel. Incidentally, the company calls attention to the new non-skid feature of the improved heel and believes that a pair of these heels will outwear two pairs of the ordinary kind, tho selling at no higher price.

THE ASKAM RUBBER CO.

The Askam Rubber Co., located at Milford, Connecticut, is a new reclaiming company with a mill operated by William H. Askam, widely known as an expert on rubber reclaiming and matters pertaining thereto.

The new company, which will confine its operations to the reclaiming of tire stocks, commences under particularly happy auspices, so far as the plant and its equipment are concerned, as Mr. Askam personally superintended the construction, arrangement and instalment of machinery; the natural result of which is a very complete and thoroughly modern reclaiming factory.

It is eligibly located on 5 acres of land belonging to the company. The principal building contains the offices, and also the mill room, which is equipped with seven mills, one of the largest types of vacuum dryers, a mammoth vulcanizer and a number of strainers. The chemical building, devoted to the cleaning and treatment of stocks, is fitted with the latest appliances.

The power plant, to which is attached the pumping station, has a 250-h. p. direct-connected Corliss Engine and two 250-h. p. standard boilers. The company supplies its own light.

The output will be known as the "Arco Grades" of reclaimed rubber. Local transportation of stock will be handled by a three-ton Alco truck.

CAPITAL INCREASES.

The capital stock of Morgan & Wright, tire manufacturers, of Detroit, Michigan, has been increased from \$2,500,000 to \$5,000,000, and a corresponding increase has been authorized in the capital of the G. & J. Tire Co., of Indianapolis, Indiana—both subsidiaries of the United States Rubber Co.

The capital stock of A. G. Spalding & Brothers, the well known sporting goods dealers, has been increased from \$4,000,000 to \$6,000,000.

RUBBER COMPANY DIVIDENDS.

A quarterly dividend of 1½ per cent. has been declared on the preferred stock of the Kelly-Springfield Tire Co., payable April 2; and official announcement is made that a plan is under consideration for taking care of accumulated back dividends of this stock. The directors have also authorized the payment on April 1 of 4 per cent. interest on the debenture bonds, and also authorized the operation of the sinking fund by the payment of 4 per cent. on the outstanding debenture bonds to the Bankers' Trust Co. on or before April 1, 1914, for the purpose of said sinking fund.

The B. F. Goodrich Co., of Akron, Ohio, has declared a regular quarterly dividend of 1¾ per cent. on its preferred stock, payable April 1 to stockholders of record on March 21.

The Boston Woven Hose & Rubber Co. has declared a quarterly dividend of \$3.00 per share on its common stock, payable March 15 to stockholders of record on March 5.

THE LOEWENTHAL CO. ON THE FUTURE OF SCRAP RUBBER.

The Loewenthal Co., of New York, has recently issued and distributed to its customers the following interesting circular in regard to the outlook for the scrap rubber industry:

"Many of our customers have asked us to give our opinion as to the rubber market. The present situation being a very unusual one, we feel justified in breaking our fixed rule not to make market predictions, and we consider it our duty to advise you regarding the situation as we see it.

"The most important cause of the present condition is the extremely low price of new (crude) rubber. Much larger quantities of new rubber have come into the market than ever before in the history of the business. Cheap new rubber means cheap scrap rubber. From all information we can gather, there is no prospect that new rubber will advance for a long time to come. If such is the case, scrap rubber can not advance.

"As soon as general business conditions revive, the rubber business must naturally improve also. Rubber will be used to as great an extent as ever before, but the manufacturer will buy new rubber if he can not buy scrap at a proportionately low price.

"It seems clear, therefore, that scrap rubber will remain at a low level for an indefinite time, but that as much will be bought by the mills as formerly, if the mills can buy scrap at a price to compete with new rubber. If they can not get the scrap, they naturally will buy the crude. It is up to the dealers, therefore, to face the new conditions, and to commence as soon as possible to buy and sell in accordance with these conditions."

THE LEE COMPANY'S NEW PLANT.

The cut presented herewith shows the new plant of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, which has been described as "the aristocrat of the rubber mills" because of its architectural beauty and the large acreage which surrounds it.

The new plant is most favorably located along the Schuylkill river, and in close proximity to the stations of the Pennsylvania and Reading Railways, which naturally affords excellent shipping facilities. The buildings are of the most modern concrete construction and fireproof throughout. All machinery in the plant



PLANT OF LEE TIRE & RUBBER CO.

is electrically-driven, thus dispensing with shaftings and belts. The heating and ventilation—in fact, all the equipment—is of the latest and best. The two main buildings are 400 feet long and 85 feet wide, one of them being four and the other two stories high. The power plant is housed separately. The Lee factory specializes in tires and druggists' sundries, and its product is favorably regarded and extensively sold. The company employs about 750 hands, and its weekly payroll exceeds \$10,000.

PROF. BRADLEY JOINS THE UNITED STATES RUBBER CO.

Prof. Walter P. Bradley, who for the past 25 years has been an instructor in chemistry at Wesleyan University, Middletown, Connecticut, has resigned his position with that institution and commencing July 1 next will become associated with the United States Rubber Co., in charge of its chemical experiments and investigations. Prof. Bradley recently obtained a year's leave of absence from the college, spending that time in the employ of the United States company, where he organized a system of chemical, physical and process laboratories, the success of which, with the value of his recommendations in the manufacture of rubber thread, has resulted in this permanent connection. Prof. Bradley graduated from Williams College in 1884, following which he spent some time as a student in Germany, returning to Williams and serving on its staff for three years as an instructor in chemistry. He went to Wesleyan in 1889 and was made Professor in 1893. His work as a teacher has been highly successful. The announcement of his resignation has caused keen regret at Wesleyan, among both the students and the faculty, all of whom, however, appreciate his special fitness and ability to engage in a commercial career of such far-reaching possibilities.

MR. VAIL'S COMFORTABLE SALARY.

The Massachusetts Public Service Commission thought it would like to know what public service corporations pay salaries in excess of \$6,000 a year, so it asked the various corporations of this character to send in the information. According to returns received, there are not many salaries connected with these companies in excess of \$6,000, but there are a few. The salary of Theodore N. Vail, as president of the American Telegraph & Telephone Co., was reported as \$100,000. Mr. Vail is also one of the directors of the United States Rubber Co.

MR. TOWNER ACTS AS CHAIRMAN.

Mr. R. P. Towner, secretary and treasurer of Towner & Co., rubber distributors of Memphis, Tennessee, was chairman of the entertainment committee on the occasion of the "Prosperity Dinner" given at the Hotel Chisca, in Memphis, on January 15, by the Business Men's Club. The toastmaster at that dinner was General Luke E. Wright, and the speakers were men prominent in national railroad and banking circles. The function was a great success and reflected much credit on Mr. Towner and his aides.

Mr. Towner is greatly interested in the commercial development of Memphis, which, by the way, is one of the most enterprising cities in the south. If there were need for proof of this sufficient proof would be found in the notable publication called "Southern Prosperity" recently issued by the "Commercial Appeal." This is a finely printed and lavishly illustrated book 19 x 23 inches in size and consisting of 70 pages and cover, portraying the growth and development of Memphis' commerce and industries. The photographs showing the weighing of cotton and its shipment on the levee, illustrating the article on cotton in this issue, appeared in this special number of the "Appeal" and were secured for THE INDIA RUBBER WORLD through the courtesy of Mr. Towner.

MR. STEPHEN DOUGLAS BALDWIN MARRIED.

Announcement has been received of the marriage at Chicago on February 14 of Mrs. Elizabeth Blanche Crow and Mr. Stephen Douglas Baldwin (president of the Cincinnati Rubber Manufacturing Co.), who after March 1 will make their home at the Hotel Gibson, Cincinnati, Ohio.

Replete with information for rubber manufacturers Mr. Pearson's "Crude Rubber and Compounding Ingredients."

COMMODORE BENEDICT BACK FROM HIS CRUISE.

Commodore E. C. Benedict, one of the directors of the United States Rubber Co. and for some years interested in rubber plantation developments and other enterprises on the Amazon, arrived on his yacht "Oneida" in New York harbor on February 18, from an 8,000-mile cruise through the West Indies and as far south as the Amazon. This is the sixth cruise covering about the same waters taken by the Commodore since 1904. Among his guests in his latest voyage to South America and back was William M. Ivins, former president of the General Rubber Co.

R. J. FIRESTONE ON A WESTERN TRIP

The sales manager of the Firestone Tire & Rubber Co., R. J. Firestone, has just finished a six weeks' tour through the farther



R. J. FIRESTONE

western states, visiting all the centers in which the Firestone company has offices and agencies.

FOREIGN TRADE OPPORTUNITIES.

Commercial Agent Ralph M. Odell is conferring with American manufacturers and commercial organizations regarding foreign markets for cotton goods, being located at the branch offices of the Bureau of Foreign and Domestic Commerce, 315 Custom House, New York, for about two weeks, beginning February 19.

A report from an American consular officer in a European country states that a company in his district has expressed a desire to represent American manufacturers of canvas and duck cloths. Correspondence may be in English. Report No. 12,548.

Bids will be received until March 3 by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., for furnishing the following supplies: Schedule 6370, asbestos packing; schedule 6391, flexible steam copper hose; schedule 6304, asbestos sheets; schedule 6373, sheet rubber. Firms interested should make application to the Bureau of Supplies and Accounts, giving the schedule number.

WALPOLE RUBBER ASSETS \$777,776

The receivers of the Walpole Tire & Rubber Co. have recommended the sale of the company's assets and property. The assets are placed at \$777,776, with liabilities of \$420,823. Funds sufficient to pay a dividend of from 5 to 10 per cent. are in hand, the receivers reported.

TRADE NEWS NOTES.

The Panama Rubber Co., incorporated with a capital stock of \$13,000, has taken space in a new seven-story building at 701 Lucas avenue, St. Louis, Missouri, where a plant has been equipped for the manufacture of raincoats, dusters and other rubber garments. The officers of this new company are: Carl G. Schwarz, president; F. W. Sanner, vice-president, and G. G. Giese, secretary.

The Lion Liner Co., formerly located at Appleton, Wisconsin, has removed its plant to Sheboygan, in the same state, where in much larger quarters it will continue the manufacture of inner liners and other tire specialties.

While the terms of settlement have not been made public, announcement is made that the action brought against the Seamless Rubber Co., of New Haven, Connecticut, about a year ago, by the Batavia Rubber Co., of Batavia, New York, which alleged imitation of the Batavia tread, and has discontinued and the charge withdrawn.

Plans are under way for a large brick and steel warehouse to be occupied by the Goodyear Rubber Co.'s branch, at Milwaukee, Wisconsin. The new building will be located at 382-384 East Water street.

Dunlop wire wheels are now being manufactured in quantities in the factory recently opened for this purpose at Long Island City, New York.

A new concern—known as The Brooklyn Shield & Rubber Co.—has been formed and duly incorporated to take over the business formerly conducted by H. P. Rindskopf at 397 Myrtle avenue, Brooklyn, New York. Mr. Rindskopf is president of the new company.

The British Rubberized Fabric Co., notice of whose incorporation appeared in our February number, has been established since November last at 233-235 South First street, Brooklyn, dealing in all sorts of rubberized fabrics and manufacturing raincoats. Jos. N. Rosseau, president of the company, was formerly vice-president and general manager of the British-American Rubber Co., of St. Louis, Missouri, and the list of officers includes the name of Kieve Schor, of the Goodyear Raincoat Co., 15 East 17th street, New York.

The Tire Co. of America, recently incorporated in Illinois, will not only conduct a retail and jobbing business in tires of all kinds, at its headquarters at 1239 Michigan avenue, Chicago, but will vulcanize and repair solid and cushion tires for electric cars—being the only firm, with the exception of the large factories, engaged in this sort of work, and employing special molds invented by S. Reinsberg, president and manager of the company.

Additions and improvements which when completed will make room for an extra force of from 30 to 50 men have been started at the plant of the Mansfield Tire & Rubber Co., Mansfield, Ohio. The new addition, which is to be erected on the south side of the present factory on Newman street, will be used as a finishing room.

An automobile show will be held at Des Moines, Iowa, from March 9 to 14, under the auspices of the Des Moines Automobile Dealers' Association. Fifty-six different makes of cars and a large number of accessories will be displayed.

A show window display in the Houston, Texas, branch of the Firestone Tire & Rubber Co. recently claimed considerable attention and occasioned much comment because of its cleverness of design, being in the form of a racing automobile and composed entirely of the regular branch store stock and equipment of tires, wheels, tire boots, cans of cement, metal signs, etc.

THE DREADNAUGHT TIRE & RUBBER CO. ELECTS OFFICERS.

The new plant of the Dreadnaught Tire & Rubber Co., at Orangeville, Maryland—now in operation—has been equipped for the immediate production of tires at the rate of 500 per day, the expectation of those interested being to double this capacity in a very short time. A recent meeting of the stockholders resulted in the election of the following directors: Walter B. Swindell, Albert W. Adt, Wilmer Dunbar, C. T. Triplett, Walter E. Hill, H. C. Whitlock, A. B. Whitlock, John Alden, J. Herbert Rice and George D. Hopkins, these in turn electing as officers: Walter B. Swindell, president; Albert W. Adt and Wilmer Dunbar, vice-presidents; C. T. Triplett, treasurer, and Walter E. Hill, secretary.

QUALITY TIRE & RUBBER CO.

The Quality Tire & Rubber Co., of Hartville, Ohio, is now taking orders in anticipation of the early opening of its factory. This company, incorporated with a capital of \$75,000, will manufacture rubber tires and tubes exclusively, in the two-story brick and steel building erected especially for that purpose and which contains about 7,600 square feet of floor space. At the start the company will employ about 35 men, but with the addition of other buildings which are to be erected next summer it is expected that this force will be considerably increased. The officers of the company are: J. C. Guthrie, president; E. A. Brown, vice-president; E. B. Smith, secretary; Ed. L. Smith, treasurer. G. F. Munk, F. E. Shumacher and E. E. Smith are on the board of directors, and E. H. Trump is factory superintendent.

THE FISK RUBBER CO.'S ANNUAL REPORT

The Fisk Rubber Co., incorporated under the laws of Massachusetts on October 23, 1912, when it acquired the business and property of the Fisk Rubber Co. of Delaware, has issued its first annual report, for the year ending October 31. This report shows net quick assets amounting to \$3,216,037 and profits for the year are given as \$606,000, a balance of \$202,479 being left after payment of dividends declared on the preferred stock and special charge-offs. Items of expenditure include: Plant additions, \$982,745; repairs, \$106,918, and depreciation, \$71,431. Notwithstanding constant night and day operation of the plant—located at Chicopee Falls, Massachusetts—its productive capacity has not been sufficient to meet the demand, a condition which the recently completed additions are expected to remedy.

THE GOODYEAR TIRE & RUBBER CO. OF CANADA, LTD.

At the annual meeting of the Goodyear Tire & Rubber Co. of Canada, Limited, held at the company's office, at Toronto, Ontario, the following officers were elected for the new year: F. A. Seiberling, president; R. P. D. Graham, vice-president and sales manager; C. H. Carlisle, treasurer and general manager; C. J. Oille, secretary and assistant treasurer, and E. H. Koken, superintendent.

This company has made extensive alterations and improvements in the hotel property purchased about a year ago at Bowmanville, Ontario, and has converted it into clubrooms and boarding house for its employees, equipping it with bowling alleys, billiard tables, shower baths, steam heat, etc., as well as providing tennis courts and means for the enjoyment of other outdoor athletic sports. The formal opening of the clubrooms was celebrated by a banquet, the officers and employees of the local factory entertaining the twelve managers of the Goodyear Canadian branch offices.

More than a mile of hose was called into use recently in Montreal, Quebec, when it was found necessary, owing to a break in the main water conduit, to convey a stream from the St. Lawrence River to subdue a blaze at Ontario street and Providence Lane, a mile distant.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

THE LOEWENTHAL CO. CHANGES ITS OFFICE ADDRESS.

The Loewenthal Co., of New York, has removed its offices from Watts street, where its warehouses are located, to 37 West Thirty-ninth street.

UNITED STATES CONDITIONING & TESTING CO.

The United States Conditioning & Testing Co., located at 340 Hudson street, New York City, has recently organized a department for determining the physical qualities of mechanical rubber and to do the usual analytical work of a well-equipped rubber laboratory. The laboratory is, in fact, maintained as a convenience for the textile industry and includes in its controlling body many prominent representatives of the different branches of this trade. It is under the charge of D. E. Douty, formerly in control of the engineering division—of which the rubber laboratory was a section—of the Bureau of Standards, Washington, D. C.

THE ALDEN COMPANY PAYS 10 PER CENT.

On February 24 the Federal District Court of Massachusetts confirmed the settlement agreed upon between Geo. A. Alden & Co., of Boston, and their creditors, on the basis of 10 per cent. payment, which will be made immediately. This adjustment will greatly assist the New York Commercial Co.—which went into liquidation last April, and which is one of the largest creditors of the above named firm—in the settlement of its own affairs.

NEW INCORPORATIONS.

Albany Belting & Supply Co., February 5, 1914; under the laws of New York; authorized capital \$20,000 (all paid in). Incorporators: Matthew Van Alstyne (president), A. Y. Van Alstyne (vice-president)—both of 309 Quail street, Albany, New York, and Charles H. Hay (treasurer), Slingerlands, New York. William D. Baker is secretary of the company, the purpose of which is to manufacture all kinds of belting and mill supplies, etc.

Bourn Insulated Wire & Cable Co., February 5, 1914; under the laws of Maine; authorized capital \$150,000. Incorporators: John H. Pierce (president), Charles L. Hutchinson, Ernest M. White, L. A. Davis—all of Portland, Maine—and Stephen W. Bourn (treasurer), Providence, Rhode Island. To manufacture, buy, sell, trade and deal in, insulated wire and cables, rubber and its allied products, etc.

Bronx Rubber & Auto Specialty Co., Inc., January 21, 1914; under the laws of New York; authorized capital, \$4,000. Incorporators: Josephine Mulholland, Joseph A. Mulholland—both of 218 West Seventy-first street—and Sidney J. Mulholland, 2600 Marion avenue, Bronx—all in New York City. To deal in tires and auto supplies.

Brooklyn Shield & Rubber Co., Inc., January 28, 1914; under the laws of New York; authorized capital \$50,000. Incorporators: Emanuel Newman, 391 Fulton street, Henry P. Rindskopf (president) and Leroy H. Rindskopf (treasurer)—both of 699 Madison street—all in Brooklyn, New York. Location of principal offices and works, Sumner avenue, Hancock and Halsey streets, Brooklyn; branch offices at 1133 Broadway, New York City and 925 Chestnut street, Philadelphia. To manufacture and deal in dress shields, rubber sheetings, specialties, etc.

Chace-Barton Belting Co., Inc., February 3, 1914; under the laws of New York; authorized capital \$5,000. Incorporators: Stanley T. Chace, Alexander J. Weppner—both of 405 Linwood avenue—and Garrett P. Barton, 372 Baynes street—all in Buffalo, New York. To manufacture belting, hose, mill supplies, etc.

Delehanty Tire Corporation, January 2, 1914; under the laws of New York; authorized capital \$125,000. Incorporators: W. E. Delehanty, 139 East Forty-fourth street; N. M. Cooke, 17 East

Forty-eighth street, and J. V. Reddy, 421 Seventh avenue—all in New York City. To manufacture and deal in auto tires, etc.

Duplex Tire Company, Inc., January 16, 1914; under the laws of New York; authorized capital \$1,000. Incorporators: James Martin, Gertrude Martin—both of 145 East Fifty-third street—and Joseph E. Finney, Jr., 461 Edgecomb Road—all in New York City. Tire repair and sales business.

Duval Spring Tire Co., The, February 2, 1914; under the laws of Massachusetts; authorized capital \$100,000. Incorporators: Louis Duval, Robert B. Whitman—both of Old South Building, Boston—and Edwin S. Plaisted, Arlington—all in Massachusetts. To manufacture and sell tires for vehicles and for wheels of all kinds.

Gluckauf Company, Inc., The, February 17, 1914; under the laws of New York; authorized capital \$20,000. Incorporators: Isaac Neuhauser, 967 Trinity avenue, New York City; Morris Gluckauf and May Gluckauf—both of 456 Prospect Place, Brooklyn, New York. To manufacture suspenders, garters, etc.

Hunter Rubber Co., The, January 27, 1914; under the laws of New Jersey; authorized capital \$150,000. Incorporators: Charles A. Hunter, Norman Charles Hunter—both of 786 Broad street—and George E. Post, 102 Washington avenue—all in Newark, New Jersey. To manufacture and sell rubber goods of every kind and description, etc.

Kinton Co., Inc., February 5, 1914; under the laws of New York; authorized capital \$10,000. Incorporators: Frank C. Vinton, Walter E. Kinney and Charles E. Graves—all of Rochester, New York. To manufacture and deal in rubber articles.

New Process Rubber Co., Inc., February 4, 1914; under the laws of New York; authorized capital \$5,000. Incorporators: Henri Dujardin, 248 Washington street, T. Philip Hornsey, 309 Broadway—both of New York City—and Cornelius D. McGiehan, 2 Pearsall avenue, Jersey City, New Jersey. To rebuild tires, etc.

Old Dominion Tire Corporation, The, January 17, 1914; under the laws of Virginia; authorized capital \$10,000, minimum \$3,000, divided in shares of \$100 each. Incorporators: J. E. Guy, J. D. Guy—both of Ocean View—and B. S. Joynes, Norfolk—all in Virginia. To buy and sell tires for automobiles, etc.

Ontario Tire & Rubber Co., Inc., February 14, 1914; under the laws of New York; authorized capital \$50,000. Incorporators: Harold V. Cock, 199 Kingsley street, F. Leslie Robinson, 50 Allen street—both of Buffalo, New York—and Frank B. Rowley, 257 Broad street, Tonawanda, New York. To manufacture and deal in tires and rubber goods.

Parker-Hammerton Manufacturing Co., The, January 7, 1914; under the laws of Massachusetts; authorized capital \$50,000. Incorporators: Alfred J. Hammerton, Malden; Arthur S. Brock, Saugus, and George C. Parker, Lynn—all in Massachusetts. To buy, sell, manufacture and deal in rubber and rubber goods, etc.

Rumsey & Greutert Co., Inc., January 31, 1914; under the laws of New York; authorized capital \$100,000. Incorporators: Leslie Reid, 240 West Eleventh street, New York City; Clarence J. Weymer and Robert Rumsey—both of 23 Euclid avenue, Summit, New Jersey. To deal in rubber, gutta percha, etc.

Salvage Company, Inc., The, February 17, 1914; under the laws of New York; authorized capital \$5,000. Incorporators: Thomas Dodger, 605 West One Hundred and Thirty-first street; David A. Sterling, 126 West One Hundred and Twelfth street, and Herman Lenitz, 522 West One Hundred and Forty-seventh street—all in New York City. To deal in waste rubber, old tires, etc.

Victor Tire & Rubber Co., The, January 30, 1914; under the laws of New Jersey; authorized capital \$125,000. Incorporators: Thomas Skinner, Horace V. Williams and Edward P. Cropper—all of 20 Market street, Camden, New Jersey. To manufacture, buy, sell, import, export and deal in tires for automobiles, etc.

THE GOODYEAR COMPANY BUILDS A WAREHOUSE NEAR NEW YORK

A new five-story, eight-foot building of brick-faced, reinforced concrete has been erected at Jackson avenue and Honeywell street, Long Island City, New York, for occupancy as a warehouse by the Goodyear Tire & Rubber Co. of Akron—this in order to better care for the New York City business, which has developed beyond expectations. The warehouse is close to the Pennsylvania Railroad tracks and is expected to greatly facilitate the company's business in this section.

NEW DISTRIBUTING AGENCIES FOR THE BEACON FALLS RUBBER SHOE CO.

The number of branch stores in operation by the Beacon Falls Rubber Shoe Co., of Beacon Falls, Connecticut, has recently been enlarged by the addition of two new distributing agencies—one located at 926-928 Broadway, Kansas City, and the other at 311-315 First avenue, North, Minneapolis, Minnesota. These new branches will carry complete lines of rubber footwear and tennis goods and in addition will be able to draw on the large reserve stock carried by the Chicago agency. The company now has distributing branches at Boston, New York, Chicago, Minneapolis, Kansas City and San Francisco. Necessary machinery for the manufacture of uppers for tennis lines has been installed at the factory, and this new department is in full operation.

RUBBER BOOTS AT THE PANAMA-PACIFIC EXPOSITION.

The importance of the shoe industry has been recognized by those in charge of the Panama-Pacific International Exposition, who have set aside adequate space in the Manufacturers' and Varied Industries Building to be devoted to an exhibition of boots and shoes, while in another section provision is made for an exhibit of rubber boots and shoes and equipment and methods used in the manufacture of India rubber and gutta percha goods. Footwear for sportsmen and travelers and for all games and sports will be shown in still another section.

LAID IT ON THE GOLF BALL.

The Travelers Protective Association of St. Louis has recently been made defendant in an action for damages instituted at Chattanooga, Tennessee, the plaintiff alleging that while playing golf on the links in that city he was struck upon the ankle by a golf ball, causing blood poisoning, which necessitated the amputation of the limb. In answer to complaint the association denies liability, claiming lack of evidence that the golf ball actually caused blood poisoning.

GUM BOOTS AS LIFE SAVERS

A certain dairyman of Palo Alto, California, owes his life to the fact that on his early morning routes he wears good, heavy rubber boots. The two horses on the team he was driving on a recent morning came in contact with and were shocked to death by live wires which had been broken by a severe storm and had fallen into the street, and, ignorant of the possibilities of electricity, he would undoubtedly, when unfastening the harness, have shared their fate had he not been wearing rubber boots, which served as effective insulation from the ground.

THE LEE COMPANY'S NEW RUBBER.

The Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, is now bringing to the attention of the public, as a result of more than a quarter of a century of experience in rubber manufacture and of three years of continuous experimenting, a trade-marked brand of rubber known as "Vanadium," which is used only in Lee Regular and "Zig-Zag" tires and in "Velvet" red inner tubes. This rubber is described by the manufacturers as selected rubber, refined and chemically treated with Vanadium—a process which invigorates and refreshes the rubber, increases its resiliency, as well as its density—by contracting the pores—and renders it tougher, more elastic and longer-lived than the ordinary rubber of commerce.

TRADE NEWS NOTES.

The William M. Gordon Rubber Co., of 85 Auburn street, Chelsea, Massachusetts, do a general business as reclaimers and general merchants in scrap rubber, buying and selling all kinds of this material.

The common council of Detroit, Michigan, has received a petition signed by eighty-two motor truck owners asking that the ordinance referring to the equipment of motor trucks with fenders be rescinded—the protest being based on inability to obtain the right kind of fenders rather than on the expense their purchase would entail.

Of the 554 patents issued in one week of this year by the United States Patent Office, 92 were granted to residents of other countries; which shows to what an extent that office is patronized by foreign inventors.

A list recently given out by the tax assessors of Naugatuck, Connecticut, shows that of taxable property in that city valued at \$10,552,598, the Goodyear India Rubber Co. is assessed for \$1,009,650. Other rubber manufacturing companies which contribute toward this total assessment are: The Goodyear Metallic Rubber Shoe Co., with property of an assessed valuation of \$899,839; the United States Rubber Co., \$280,750, and the Rubber Regenerating Co., \$200,000.

The annual three days' conference of the store managers of the Fisk Rubber Co. was held the middle of February at the company's factory at Chicopee Falls, Massachusetts, 45 branches in all parts of the country being represented. On the evening of the 13th an informal dinner was given at a local hotel.

Representatives of the Midgley Tire & Rubber Co., incorporated in January under the laws of the State of West Virginia, with a capital of \$500,000, are reported as searching for a location suitable for a tire plant, and with this in view have recently made a visit to Columbus, Ohio, the former home of Thomas Midgley, manager of the company. Most of the men connected with this enterprise are located in Pittsburgh—a fact which it is thought may influence the choice of a plant in that city.

The Firestone Tire & Rubber Co. has recently taken over the business of the Meeley Rubber Co. at Washington, D. C., which it will continue as a branch store.

A site has been sought at Wheeling, West Virginia, by a large rubber concern now located at Akron, for a tire plant, the requirements being a block of land embracing ten or twelve acres, situated above the highest flood mark. While it is believed that no options have yet been taken, several such sites are offered. The transportation facilities of Wheeling are all that could be desired, and the city hopes to secure this new industry, which, as proposed, would be one of the largest in that locality, employing between 500 and 600 men and being capitalized at \$500,000. Other rubber products would be included in the output in addition to automobile tires.

An order of exceptional size has recently been received by the Manhasset Manufacturing Co., of Putnam, Connecticut, manufacturers of tire fabrics. This order, which is from an automobile tire manufacturing concern in Ohio, calls for 300,000 pounds of fabric. The Connecticut tire fabric industry generally is in a prosperous condition.

Information has come to us that a concern prominently identified with the rubber industry—in the various centers of which it is well represented—is now prepared to market sulphurs, compounds, substitutes and other generally used commodities, for manufacturers of such articles who are not closely in touch with the rubber trade.

CABLES 14 YEARS OLD AND AS GOOD AS EVER.

An interesting test of cable endurance has recently come to light. Fourteen years ago the Commercial Cable Co. wished to connect its New York office by underground conduits with its trans-Atlantic and other deep-sea cables, converging at a point at the eastern end of Coney Island—some 18 miles from the office. The order for these cables was given to The Okonite Co., of New York, and three cables of four conductors were laid at that time. Four years later, in 1904, three other cables of four conductors were also laid by the same company. This connection from New York to Coney Island traversed Jamaica Bay.

Not long ago the United States Government decided to dredge the channel in this bay, and the Commercial Cable Co. was asked to remove its lines—which it did, selecting a new station at Far Rockaway. The Okonite Co. provided the cables for this new connection—a distance of 22 miles—and after the work was done the cable company concluded to use the old Jamaica Bay cables as extra conductors for the Far Rockaway line. After completing a considerable part of this work the general manager wrote to The Okonite Co. as follows:

"I am pleased to state that all of the cables which we have thus far withdrawn (about 18 miles in length) have proved to be in excellent condition, so much so that we are relaying them between New York and Far Rockaway, and judging from their condition, I have every reason to hope that they will still last many years, as from their appearance the time elapsed since they were laid does not seem to have affected the insulation at all."

THE B. F. GOODRICH CO. REPORT FOR 1913.

On February 24 the annual report of the B. F. Goodrich Co. for the year ending December 31, 1913, was made public. It shows net profits of \$2,599,747, which equals .83 of 1 per cent. on the \$60,000,000 common stock, after the payment of 7 per cent. on the preferred stock—which calls for \$2,100,000. President B. G. Work recites briefly several reasons for the falling off in net profits of the company. One is the fact that crude plantation rubber, which at the beginning of the year was valued at a dollar a pound, fell to 55 cents a pound before the end of the year. He also cites the labor troubles that occurred in Akron early in the year, and the general decline in trade all over the country, which affected the manufacturers of tires in common with other manufacturers.

He then goes on to mention various advantages which the company now has over its situation in former years—advantages arising from economies made possible by the unification of the Goodrich and Diamond plants.

The figures of the report are as follows:

	Year ended Dec. 31, '13	Nine mos. end. Dec. 31, '11
Net sales.....	\$39,509,347	\$37,533,861
Manufacturing, selling and general admin. expenses.....	36,451,234	33,814,527
Net profit from operation.....	3,058,113	3,719,334
Miscellaneous income.....	491,317	571,845
Total income.....	\$3,549,429	\$4,291,179
Depreciation.....	541,358	440,852
*Reduction of preferred stock.....	168,417	
Interest and bills payable.....	239,907	327,838
Net profit.....	\$2,599,747	\$3,522,489

*Reduction of treasury preferred stock from cost to par value.

The consolidated balance sheet as of December 31, 1913, compares as follows:

	ASSETS.	1913.	1912.
Real estate, buildings, plant, good will, etc.....		\$71,060,802	\$70,685,722
Investments in other companies.....		1,197,058	1,635,958
Preferred stock in treasury.....		2,058,700	2,227,117
Societe Francaise B. F. Goodrich.....		570,987	
Current assets.....		19,401,460	24,007,698
Deferred charges to operation.....		222,950	229,619
Total.....		\$94,511,957	\$98,786,114
	LIABILITIES.		
Common stock.....		\$60,000,000	\$60,000,000
Preferred stock.....		30,000,000	30,000,000
Current liabilities.....		3,505,974	7,679,879
Reserve for contingencies.....		300,000	300,000
Surplus.....		705,983	806,235
Total.....		\$94,511,957	\$98,786,114

ANNUAL MEETING OF UNITED STATES RUBBER CO.

The twenty-second annual meeting of the stockholders of the United States Rubber Co. will be held in New Brunswick, New Jersey, at its main office, on Tuesday, March 17, at 12 o'clock noon.

THE LOEWENTHAL COMPANY NOT INTERESTED

A recent issue of the "India Rubber Journal," published in London, contained a description of a new reclaiming process which, according to the article, had just been patented in England by O. A. Wheeler, E. D. Loewenthal and B. Loewenthal. In connection with this story in the English paper the Loewenthal Co. makes the following statement:

"An article appearing in a recent issue of an English rubber journal seems to have created the impression that this company is interested in a certain reclaiming process. We deem it important to correct this impression by advising the trade in general that we have not had nor have we at present any connection whatsoever with the process in question."

This process—which is called the Vulcalose process—was invented by O. A. Wheeler, of the Vulcalose Co., Hessville, Indiana.

CONVEYOR BELTS.

The accompanying illustration shows a 14,000 pound "Longlife" conveyor belt made by the B. F. Goodrich Co. in its factory at Akron, Ohio. This company not only has the largest single rubber factory in the world but states that it also has the largest belt room, with a capacity for turning out belts ranging from the smallest transmission to immense 72-inch conveyors, at the rate of four miles per day. This particular belt is for use in



A "Longlife" CONVEYOR BELT. WEIGHING 14,000 POUNDS

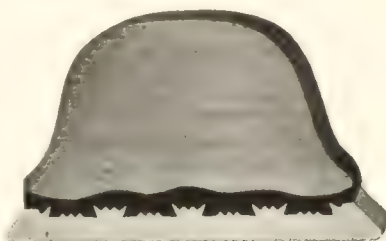
handling coal, is 36 inches wide and 1,322½ feet in length and is made of seven-ply construction with a 3/16-inch rubber cover. In order to facilitate shipment it was divided into two sections, as shown, tho it will be used on one conveyor. Goodrich belts are known and in use in almost every part of the world, not only in the United States and Canada but on all the continents and other subdivisions of the earth where mines and factories are located.

Other conveyor belts of enormous size are now being made by the Perdriau Rubber Co., Ltd., of Sydney, N. S. W., for a coal loading plant at Fort Kembla, Australia. These belts are to be approximately 1,650 feet each in length and will weigh in the neighborhood of 24,000 pounds, being made of seven-ply rubber and cotton, in one continuous length, without joints, 36 inches wide. The conveyor on which these belts are to be used will carry coal a distance of about 1,600 feet at a rate of 1,000 tons an hour.

A Few of the Latest Tires.

GOODRICH WIRELESS TRUCK TIRES.

THE small cut herewith illustrates one of several styles of the Goodrich truck tire which is built up on a steel base without the use of wires. The tire proper consists of three factors, the steel base, a sub-base of hard rubber and the usual solid rubber tread. The steel base is beveled and dovetailed on the upper surface. Instead of being an endless ring as in the usual pressed-on type, this steel base is cut through at one point in order to permit it to spread slightly. This allows it to be easily applied to the wheel and then drawn together by means of the flanges. This increase and decrease in circumference is so slight that it does not affect the sub-base of hard rubber. The sub-base is indicated by the black portion of the tire in the illustration. It is dovetailed into the steel base and is vulcanized along its wavy upper surface to the resilient tread, the union between these parts being made permanent so that they cannot



SECTIONAL VIEW OF GOODRICH WIRELESS TRUCK TIRE.

separate. This tire is made in a number of styles, such as the demountable endless form, the demountable and block form, the pressed-on type, and a special tire for electric vehicles. [The B. F. Goodrich Co., Akron, Ohio.]

SOMETHING NEW FOR THE REPAIR MAN

THE illustrations herewith show two different forms of a new retreading tire band which has just been placed on the market. The idea of supplying a retreading band with a non-skid pattern upon its surface is something entirely new and something which should appeal to the tire repair man in all localities. With one of these bands an old tire may be made as good as new, with the additional feature of having the safety tread. Retreading bands have been on the market for some time but the bands shown herewith are the first to embody the non-skid feature. These bands are made to fit all sizes of tires and are supplied with a number of different tread designs. (The B. F. Goodrich Co., Akron, Ohio.)

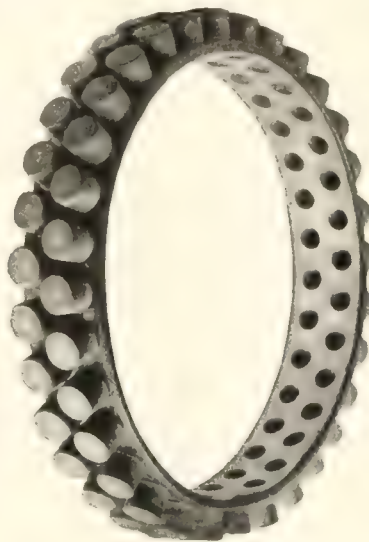


SPARE TIRES CONCEALED FROM SIGHT.

Where to put the spare tire where it will neither be in the way nor too much in evidence has long been a problem. A recent model of the limousine presents a solution of this perplexity in the form of a cupboard added to the back of the car, constituting in fact a double back, there being nothing when the doors are closed to indicate that it is not the real back of the car. This cupboard is shallow but the full width of the car, and provides plenty of room for a spare tire and for extra inner tubes, and if necessary for a spare rim.

AIR CUSHION TIRES FOR PLEASURE CARS.

A peculiar design of rubber tire, built by an English concern, is shown herewith. The tread of this tire, which is known as the "K-T," may be described as a band of rubber, on the surface



AIR CUSHION TIRE ON RIM.

of which are two rows of cylindrical rubber projections. The tread is made in a long strip and inserted by hand into a perforated rim, becoming the equivalent of an endless tire. The claim is made that this tire has the resiliency of the ordinary pneumatic without the disadvantages of the latter, and at the same time providing insurance against side slipping. Such a tire can be easily repaired should any part become injured through severe applications of the brakes or from any other cause, by removing the tire from the rim and vul-

canizing a new section of rubber in place of the damaged portion. [The Commercial Tyre Co., Limited, Long Acre, W. C., London.]

NON-SKID TREAD AND INNER TUBE

ALTHO the design of the tread projections on the tire illustrated herewith is somewhat new in form, these fill the same office as the styles on the usual type of non-skid tread. They are, however, built so as to grip the road at the point where most needed to guard against side slip. The tire is built up in the usual manner, with six layers of fabric and a breaker strip upon which the tread is vulcanized. The non-skid effect is produced by a



MOHAWK TREAD AND INNER TUBE.

double row of Xs molded on the surface of the tread, thereby producing two rows of diamond-shaped cups which grip the surface of the road in all directions. The makers of this tire are also producing a new inner tube which is provided with a ring of reinforced fabric on the side that comes in contact with the beads of the tire casing. This does away with the separate tube protector and eliminates tube pinching. [Mohawk Rubber Co., Akron, Ohio.]

A book for everybody interested in tires—"Rubber Tires and All About Them"—this office.

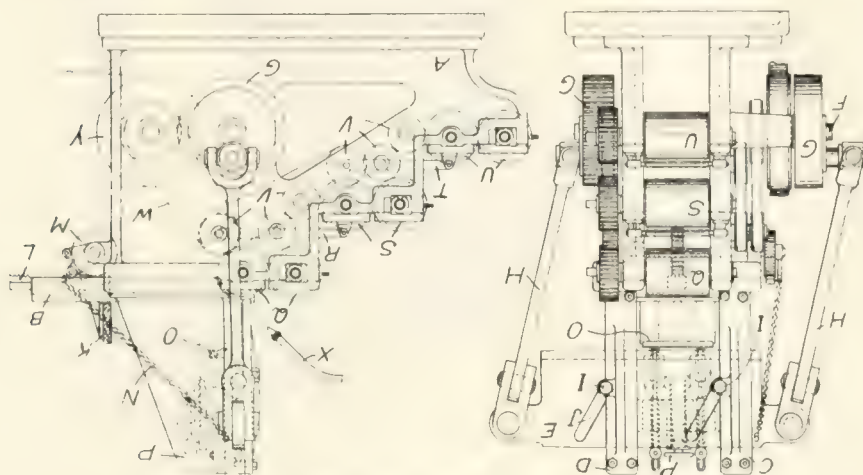
New Machines and Appliances.

MACHINE FOR SLICING, WASHING AND SHEETING RUBBER.

AMONG the recent British patents is a machine designed for slicing crude rubber into sheets, simultaneously washing the rubber and rolling the sheets. The machine comprises a guillotine knife for cutting the rubber, two pairs of washing rollers and a pair of rollers between which the sheets of rubber are run after washing. The drawings

next cutting stroke. On the downward movement of the knife the chain is slackened, the presser bar grips the rubber and the cycle of operations is repeated. During the cutting a stream of water plays over the rubber from the pipe X.

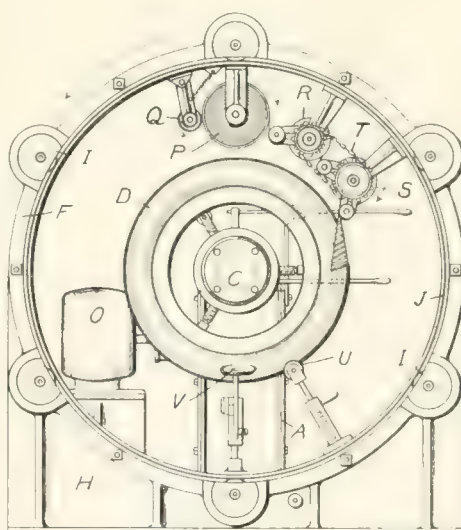
As each sheet of rubber leaves the cutter it passes between the pair of grooved washing rollers *O* where it is squeezed and rolled to allow the impurities to escape. The rubber is carried by the moving conveyor *R* to the second pair of rollers *S*, where it is again rolled and pressed. The rubber is now carried on a second conveyor *T* to a third pair of rollers *U* which give a more or less polished surface to the sheets. These rollers are driven through gears *I* and chain *W* from the belt pulley *Y*. [British Patent No. 37 (1913), granted to James Donnelly, 21 Mincing Lane, London.]



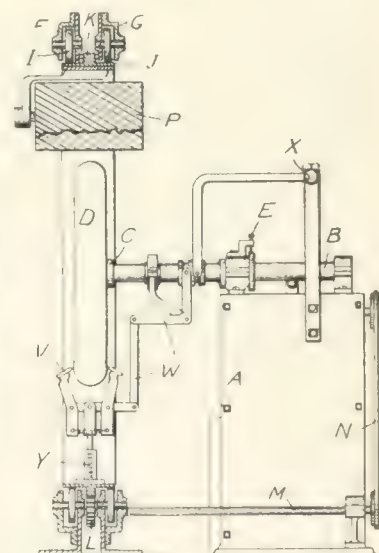
CUTTING AND WASHING MACHINE FOR CRUDE RUBBER

herewith show a front and a side elevation of the machine. The bed *I* carries a table *B*, above which are secured two uprights *C* and *D*, forming guides for the knife *E*. A transverse shaft *F* carries two cranks *G* to which are attached the lower ends of the connecting rods *H*. The upper ends of these rods are pivoted to the outer ends of the knife *E*. The upright guides *C* and *D* carry two rollers *I* which work within diagonal slots *J* in the knife. Above the table *B* is a pusher board *K*, extending through a slot in the table, and secured above the rack *L*. This rack is moved forward a short distance after each stroke of the knife, pushing the lump of rubber in front of the board *K*, under the blade of the cutter. This is accomplished by means of the pinion *M*, to which is attached a ratchet and which is operated by each upward movement of the knife through a chain *N*. Above the table is a presser bar *O*, which is held down by means of helical springs and which is used to hold the rubber firmly in position against the table during the cutting. The carriage which bears this presser bar may be adjusted by means of the hand screw *P* to fit different sized lumps of rubber.

posured upon all portions of each layer. Unlike most machines of this character, the mandrel upon which the tire is wrapped is held stationary, while the wrapping mechanism revolves around it and carries the stock roll around the mandrel.



EDMONDS' TIRE WRAPPING MACHINE



Mounted above the frame *A* is a shaft *B* which carries a chuck *C*. This chuck has radial arms, to the outer end of which the mandrel or core *D* is attached. The shaft *B* is mounted loosely in its bearings and it may be held from revolving by a pin *E* projecting into a collar on the shaft. The mechanism for wrapping the fabric on the core comprises a pair of annular rings *F* and *G* supported by the frame *H*. These rings are provided at regular intervals with six pairs of rollers *I* which bear

upon the outer periphery of the stock carrier *J*. This carrier is in the form of a large gear having gear teeth *K*. This gear is revolved by the pinion *L* on the shaft *M*, which is driven by a belt *N* through a suitable worm gear speed regulating device from the electric motor *O*. This allows the stock carrier to be revolved on the rollers *I* at different speeds.

The mechanism for applying the successive layers of fabric to the core is arranged as follows: Secured to the inner face of the stock carrier *J* is a bracket which carries the roll of stock *P*. This roll of water-proofed material is wound up with alternate layers of muslin for keeping the stock from sticking. As the stock is unwound from the bobbin the muslin is wound up on the roller *Q*. Also secured to the inner face of the stock carrier *J* are brackets carrying rollers *R* and *S* as well as three small idler rolls. The rollers *R* and *S* are connected with a chain *T* passing over sprockets on the shafts of the rollers. The sprockets are of different size, so that the two rollers must turn at different speeds. When a tire is to be formed around the core, the fabric from the roll *P* is threaded around the idler rolls and then applied to the outer surface of the core. The stock carrier *J* revolves in the direction indicated by the arrow, and the constant speed of the rollers *R* and *S* insures a uniform tension on the fabric. In order to remove air bubbles from underneath the fabric and to spread it evenly, a spring pressure roller *U* is employed. Also, in order to perform the operation of stitching, which is the ironing or rolling of the strip of fabric along the lateral surfaces of the core, a pair of rollers *V* are used. To control the movement of these rollers over the surface of the fabric a system of levers *W*, operated by the hand lever *X* through sliding collars on the shaft *B*, is installed. By this means the rollers may be held outward against the pressure of the spring *Y*. [United States Patent No. 1,080,683, issued December 9, 1913, to Charles A. Edmonds, of Akron, Ohio.]

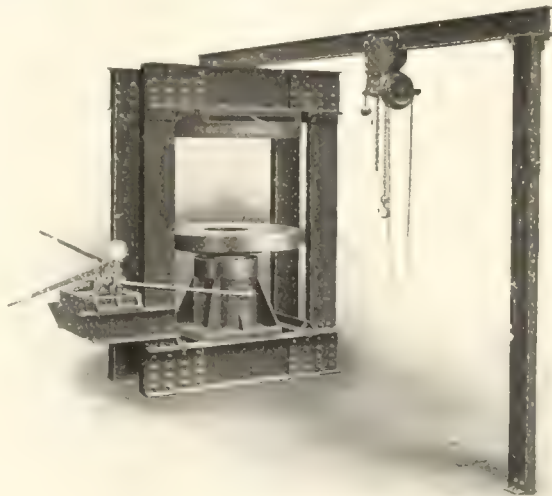
A RUBBER SKIVING MACHINE.

In the accompanying drawing is shown a machine recently introduced to the rubber trade. This machine is designed for skiving or tapering the ends of rubber tubes which are to be spliced. This applies particularly to the inner tubes of automobile tires. The cutting mechanism comprises a circular knife carried on an arbor which rotates at a speed of 2,000 revolutions per minute. It will be seen from the drawing that the machine is of extremely simple construction. The circular knife *A* is turned by power applied to the belt pulleys *B*, or by means of an electric motor *C* directly connected with the arbor shaft. The rubber tube is inserted through the centre of a brass arbor *D* and the end of the tube is folded back over the tapered end of the arbor. This stretches the tube so that it is slightly larger in diameter at the end than at the place where it is folded over the arbor. The sliding carrier *E* of the arbor *D* is now moved toward the revolving cutter *A* by raising the operating lever *F*. This moves the tube forward into the knife, cutting away the rubber and giving the end of the tube a gradual taper. Water is supplied to the work through a pipe *G* in order that the rubber may be more easily cut and to keep the material and the cutter from overheating. A tray *H* is fastened to the frame of the machine underneath the cutter to catch the waste water and to drain it away from the machine. [Allen Machine Co., Erie, Pa.]

The collapsible shaft made by the Cameron Machine Co., of Brooklyn, and placed on trial in factories at that company's expense, is in active request among the rubber mills of the country.

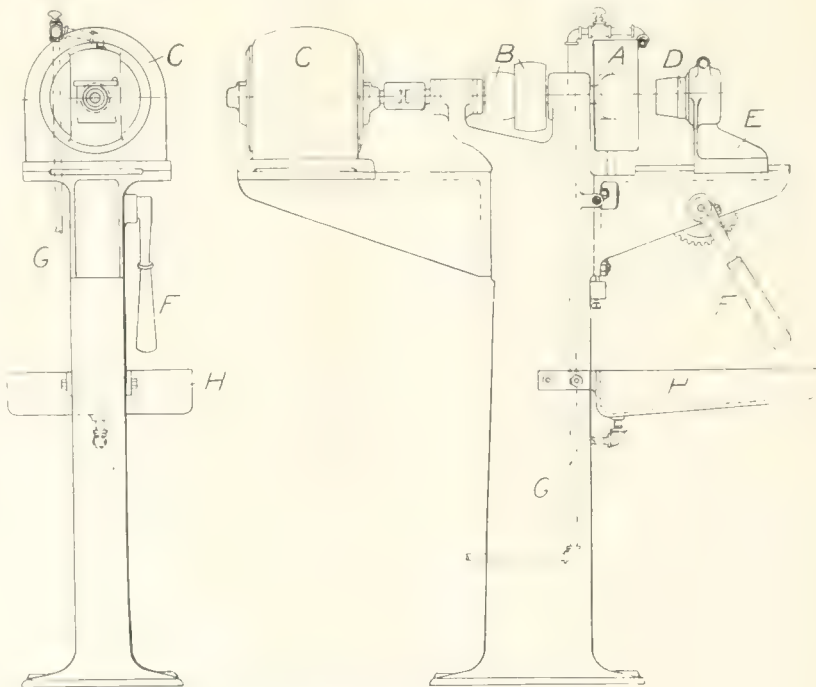
THE SHAW HYDRAULIC TIRE PRESS.

The hydraulic press shown in the accompanying illustration is a special type of press recently placed on the British market. This apparatus is designed for pressing solid band tires on wheels or rims and it may be used either in the garage or the factory. The frame work consists of steel I-beams riveted together and arranged so that the lower beams form a foundation for the hydraulic cylinder. Pressure is obtained for raising the table on the upper end of the ram by



HYDRAULIC TIRE PRESS.

means of a set of pumps with both high and low pressure cylinders. The press is made in three sizes, with 10, 12 and 14-inch rams working at a pressure of 200 pounds per square inch. At one side of the press is a runway girder forming an overhead track for a lifting block and chains, by means of which heavy wheels and tires may be easily lifted upon the plunger table. The press can be fixed in any position where a solid floor is available, since no foundation is required other than that which forms a part of the machine itself. [Francis Shaw & Co., Manchester, England.]



THE ALLEN SKIVING MACHINE.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent

THE MOTOR SHOW

THE North of England Motor Show, at Manchester, was held this year on January 9 and the following days for pleasure cars, and on January 30 and the following days for trade vehicles. Both shows were held at the City Exhibition Hall instead of (as had been intended) at the larger Exhibition Hall, outside the city, the latter having been burned down—presumably by suffragettes—in December. Last year the two shows were held simultaneously, one at each building, which was found to be inconvenient for people who wanted to get in touch with one another. Both shows were on a large scale, especially the latter, the side streets around the hall being lined with a variety of vehicles for which space could not be found inside. The use of the motor lorry for the transport of goods increases year by year, and special attention was paid to those types certificated by the War Office, which pays a subsidy of £110 to purchasers who agree to lend them, in case of demand, to the department for its services. These vehicles—of which I may mention the Karrier lorry and the Wolsley—are built for net loads of 3 to 4 tons.

But it is customary in these notes to limit myself to rubber, so passing on to tires, I may say at once that nothing really novel was on view. The great majority of the solid tires shown were of the band type in which the steel band is vulcanized into the rubber. The gallery of the hall was devoted mainly to tires, the firms exhibiting at the second show being the North British Rubber Co., Limited, The Dunlop Rubber Co., Chas. Macintosh & Co., The Continental Rubber Co., The Shrewsbury & Challiner Tyre Co., the Midland Rubber Co., the Avon Rubber Co., the Peter Union Tyre Co., the St. Helens Cable & Rubber Co., the Prowodnik (Columb Tyre Co., Limited, London), the Polack (Leo Swain & Co.) Liga Tyres, Limited, the Simplex Rubber Co., and last but not least, the De Nevers Rubber Tyre Co., Limited—the Count De Nevers being in attendance for the first time at these shows. The demand for the De Nevers band tire has necessitated a considerable enlargement of the works at Earlsfield, near London. The concern is a private, limited company, the count being chairman and managing director. The Prowodnik company had its red solid and dull brown pneumatic tires on view. A month or two ago I mentioned that these tires were sold at a higher price than competitive makes. This, I am told officially, was due to the demand overtaking the supply, and that now prices conform to those of other leading makes. The company—which is, of course, the well known Russian one located at Riga—has recently opened a branch in America.

Prominent among the newcomers to this show was the Simplex Rubber Co., Limited, of Scrubbs Lane Works, Willesden, London, whose stand contained the solid Simplex band tires for commercial motor vehicles. With regard to these tires, it is stated that they contain nothing but the finest quality materials, and that the process by which they are made as well as the machines employed in their manufacture are protected by the company's own patents. In this connection I may mention that the Simplex Co. is closely concerned with re-formed rubber and claims to hold the master patents concerned with their procedure of re-forming. Except the statement that these tires are cheaper at first cost than any others on the market, there is no information to be gained as to whether they consist wholly or only in part of re-formed rubber. Any authoritative statement on this point would certainly be of great interest, considering how little commercial success has been achieved by the several re-

forming companies. These tires carry the usual guarantee of 10,000 miles and are said to have considerably exceeded this in practice.

NEW ENTERPRISES

For some time past there have been rumors that a large rubber manufacturing firm was to commence making its own tire fabric, tho the preliminaries have been kept very quiet. Definite information up to a certain point is, however, now available in the fact that two new companies were registered in London in the last week of January, among the objects of each of which was the adoption of an agreement with the Dunlop Rubber Co. The new concerns are: Tyre Yarns, Limited, with a capital of £60,000 in £5 shares, and Fabric Weavers, Limited, with a capital of £40,000 in £5 shares—both being private companies. The directors are the same in each case, all of them men closely associated with and well known in the Lancashire cotton industry. As long as the agreement is in force the Dunlop Co. has the right to nominate one director of each company. Altho some of our rubber works have directors occupying seats on the boards of cotton mills, these new registrations, whereby definite agreements are adopted with a rubber works, constitute a departure which is attracting no small attention in the trade.

SIR SAMUEL TURNER.

The primarily a matter of interest and congratulation to his fellow townsmen of Rochdale, the inclusion of Mr. Turner in the New Year's honors list as a Knight, is an event on which no doubt many American readers of this journal would be glad to have their congratulations expressed by the medium of these notes. In his native town Sir Samuel Turner has long been known as a large employer of labor and also as a generous benefactor to local institutions and charities. Originally a cotton spinner, he instituted and brought to perfection the art of weaving asbestos, thus initiating a business which is now carried on by Messrs. Turner Bros. & Co., and which is known the world over.

PIRELLI & CO.

This well known rubber manufacturing company of Milan—the only one of any importance in Italy—has decided to manufacture electric cables in England as well as in Spain, where a branch works has been established for some years. A British company has recently been registered with a capital of £200,000 in £5 shares. Agreements have been made with the General Electric Co., Limited, of London, and the object is to manufacture all classes of electric cables. A large factory is now in course of erection at Southampton, a southern town which has largely increased its population in recent years owing to shipping developments but which has not hitherto been associated with manufacturing ventures except on quite a small scale.

LITTLE KNOWN USES FOR RUBBER.

Every now and then I come across a use for rubber of which I had hitherto been in ignorance, and assuming—rightly or wrongly—that others may be in the same gloom of ignorance, I hasten to enlighten them, however small the matter may be from a commercial standpoint. I refer on the present occasion to the goggles which are worn by mineral ore breakers in chemical and other works. I don't know what the situation is with regard to other countries, but in Great Britain the use of goggles is not compulsory, being a matter for the management to determine. Thus, I find that while they are regularly used by the men in some works, in others they are conspicuous by their absence. Altho rubber bands are not absolutely necessary.

in some form or other they are generally used. In some cases, especially with the glass goggle not the most approved type—the rubber band to go round the head is of the ordinary braided variety, like a hat elastic, and, like the latter, is frequently found to be minus its elasticity after a comparatively brief use. A better tho more expensive form is the solid rubber cord about ¼-inch thick. I found this in use at one of our very largest chemical works. This is employed for the brass wire goggles which the firm makes on its own premises, the rubber cord being purchased from a particular rubber works.

NYLOR RUBBER CO

A few months ago I mentioned that this company had been formed in England by the Firestone Tire & Rubber Co., of Akron, for the production of reclaimed rubber. There are two English directors and considerable progress has been made on the buildings being erected in Trafford Park, the walls of which are of reinforced concrete. The contract for the machinery has been given to Messrs. Francis Shaw & Co., of Manchester, and electric power will be used throughout. Mr. E. L. Curbishley has been appointed general manager. Mr. Curbishley has been connected for the last year with the Lloyds Rubber Co., and it will be remembered that for many years he was director and manager of the Gorton Rubber Co., leaving it some time ago.

RUBBER TILING.

Altho the future of the rubber pavement for street or even courtyard use is somewhat problematical, manufacturers generally seem to be agreed that rubber tiling for indoor use will increase in importance as an item in the mechanical rubber trade. A prominent firm in this connection is the Leyland & Birmingham Rubber Co., which, in addition to a considerable amount of tiling put down at the Exchange Hotel, Liverpool, and the Metal Exchange, in London, has also secured the order for doing Lloyds shipping offices in London.

GORTON RUBBER CO LIMITED

The Gorton and Droylsden works of the Gorton Rubber Co., Limited, now in liquidation, were put up for sale by auction in Manchester on January 20. The properties were offered as going concerns, jointly or separately, but altho there was quite a large attendance the auctioneer failed to obtain a single bid, despite his assurance that the purchaser could not help making money, seeing how much was being made by Moseley, Macintosh and Mandleberg. The works are advantageously situated and have been fitted in quite recent years with a considerable amount of up-to-date machinery. The opinion was expressed after the abortive proceedings that the result was a foregone conclusion and the break up of the works and the disposal of the plant and machinery by private treaty was inevitable.

"AMERICAN HUSTLE."

This term, "speeding up," and whatever other synonyms it may have, have, until recently, had merely an academic interest for British manufacturers. Times, however, are changing and the development of American enterprise in England has brought the subject of American methods closely home to both capital and labor in certain districts. Perhaps the most important of these is Trafford Park, Manchester, the locality where, as I mentioned in my last notes, the Firestone Tire & Rubber Co., of Akron, is putting up a new reclaiming works. This company is said to have been influenced *inter alia* by the ruling wages being lower than in America. This, of course, is the state of affairs generally in the labor market; and in the skilled engineering trades the difference is sufficiently great to allow of a substantial rise in the rate of wages over the ordinary English rate without attaining to American expenses in this respect. In spite of the hustling they are subjected to, the workmen in a large American engineering works in Trafford Park are more than satisfied with their position, on account of the large weekly wage they draw. This makes them disinclined to join their fellows in other works in strikes, a matter which at the time of writing is portending

serious trouble. Office boys also have stated, on leaving their places, that they are going to the American works at several shillings a week higher wages, so that it is not surprising that the American invasion is being discussed with interest in local commercial circles. At the moment the profit sharing scheme announced recently by the Ford Motor car works at Detroit, is being much discussed in Manchester, as the company has two works in Trafford Park. It appears that the floor sweepers in the Manchester works are not to have one pound a day each, as in Detroit, because the cost of living is much less in England than it is in America. This decision is a great relief to British employers of labor in that district, as they could not possibly emulate such scales of payment, which it is felt would cause a general upheaval in the local labor world.

SOME ENGLISH RUBBER STATISTICS OF THE WORLD.

ACCORDING to English statistics, the world's production of rubber for 1912 was 99,000 tons, and for 1913 was 105,670 tons. The distribution of consumption for the two years was as follows:

TABLE A.

	1912.		1913.	
	Tons.	Per cent.	Tons.	Per cent.
America and Canada..	47,500	48	47,200	44.6
Germany and Austria..	16,000	16.2	16,600	15.8
England	14,500	14.7	18,000	17.2
France	10,000	10.1	9,000	8.6
Russia	9,000	9	11,500	10.9
Italy	1,000	1	1,370	10.9
Japan and Australia...	1,000	1	2,000	1.7
Total	99,000		105,670	

The increase in consumption of 6,670 tons, or about 6 per cent., was thus principally due to England and Russia.

The estimate for 1914 is 107,000 tons, being a slight total increase over 1913; the anticipated larger quantity of plantation being offset by reductions in Brazil and miscellaneous rubbers. On this basis the figures for the three years would stand:

TABLE B.

	1912.	1913.	1914 estimate.
Plantation .....tons	28,590	47,200	65,000
Brazil	42,410	39,370	32,000
Miscellaneous	28,000	19,100	10,000
Total	99,000	105,670	107,000

As compared with 1912, plantation rubber would thus show for 1914 an increased production of 36,410 tons, while Brazil and miscellaneous kinds represent respectively a decrease of 10,410 and 18,000 tons. The net increase since 1912 would be thus about 8,000 tons, or rather more than 8 per cent.

ENGLISH IMPORTS AND EXPORTS

Official figures of English imports and exports for 1898, 1912 and 1913 show the following results, to which is appended the difference, represented apparently by home consumption, tho differing somewhat from the figures shown in table A.

TABLE C.

	Imports.	Exports.	Retained for Consumption (estimated).
1898 .....tons	24,476	14,742	9,734
1912	55,023	36,299	18,724
1913	70,287	45,011	25,276

TABLE D. SOURCES OF ENGLISH RUBBER IMPORTS

	1911.	1912.	1913.
French West Africa....tons	1,281	1,507	1,009
Peru	1,570	1,606	1,301
Brazil	15,752	15,175	16,232
Gold Coast	1,215	784	667
Straits Settlements and Labuan	6,182	10,671	15,103
Federated Malay States....	2,918	6,354	9,880
Ceylon	2,235	4,062	6,705
Other countries	14,143	14,864	19,390
Total	45,296	55,023	70,287

TABLE E. DESTINATIONS OF ENGLISH RUBBER EXPORTS.

	1911	1912.	1913.
Russia	2,552	3,610	6,353
Germany	7,743	8,565	9,730
France	4,281	5,206	5,318
United States.....	9,696	14,740	17,790
Other countries.....	4,290	4,118	5,820
Total	28,562	36,299	45,011

The proportion of plantation sold at auction as compared with total product is shown as follows:

TABLE F. LONDON AUCTIONS.

	1911.	1912.	1913.
Quantity sold	9,238 tons	17,507 tons	23,300 tons
Proportion of total plan- tation rubber pro- duction	64 per cent.	61.3 per cent.	46.6 per cent.

The lower percentage of sales by auction, notwithstanding increased quantity, is partially attributable to the fact that plantation owners have been developing other outlets for their production, which has apparently grown faster than the capacity of the auctions to dispose of it. The increased plantation production of 1913 over 1912 (as shown by table B) was about 19,000 tons, of which only about 6,000 tons are represented by the excess in quantity sold by auction in 1913 as compared with 1912.

That larger quantities are coming forward from the East is, however, evident by the monthly returns of plantation rubber afloat, which grew from an average of about 5,000 tons in the earlier half of 1913 to about 6,700 tons (or one-third more) for the last four months of that year.

The area planted in rubber is estimated for 1913 as follows:

TABLE G. ACREAGE PLANTED IN RUBBER

	Acres.
Malay Peninsula.....	667,000
Ceylon	230,000
Java, Sumatra, etc.....	267,000
Other countries	55,000
Total	1,219,000

MR. AKERS' ESTIMATE OF EASTERN PLANTATION RUBBER PRODUCTION.

	Tons.	Tons.
1913.....	54,550	1917..... 213,800
1914.....	84,250	1918..... 257,250
1915.....	131,300	1919..... 302,450
1916.....	173,550	

REDUCTION IN LONDON DOCK RATES ON RUBBER.

In consequence of representations made by the Rubber Growers' Association, the Port of London authorities have made reductions averaging about 10 per cent. in their dock rates on rubber, as well as a modification in their charges for sampling, inspection, etc.

LONDON PLANTATION PRICES NET.

By the operation of the new rules which came into force on January 1, the allowances hitherto customary of $2\frac{1}{2}$ per cent. discount and $\frac{1}{2}$ per cent. draft on plantation rubber in London are no longer made by sellers. This change equals an advance of 3 per cent., or about $\frac{3}{4}$ d. per pound at the present price of rubber.

RUBBER PAVING.

Interest in the subject of rubber paving still continues to be manifested in Europe. The London press reports that the underground room at Lloyds (the insurance exchange) is now being covered with a composition of rubber guaranteed to last for 20 years. The committee of the London Metal Exchange are said to be much gratified with the success of their new rubber floor covering; noise and the smell of rubber having been reduced to a minimum. Other specimens of rubber paving are being shown in the west end at 12 Old Bond street and elsewhere.

THE FOURTH INTERNATIONAL RUBBER AND ALLIED INDUSTRIES CONGRESS.

THE fourth International Rubber and Allied Industries Congress will meet at the Royal Agricultural Hall, London, on Tuesday, June 30. Sir Henry A. Blake, president, will welcome the delegates and deliver an inaugural address. Those who attended the conference meetings held in connection with the Rubber and Allied Trades Exhibition in London in 1911 will recall the many profitable discussions that followed the reading of an exceptionally interesting series of papers. The intention is that the conference meetings connected with the coming exhibition of 1914 shall be so arranged and conducted as to be of still more interest and profit to those who attend. To facilitate the arrangement of the daily conference programs it is requested that all who intend to present papers should send in the titles at once.

The executive committee invites the presentation and reading of papers by any who desire to do so; and in order that all papers written in languages other than English may be translated, and the translations ready for circulation at the conference meetings, it is urged that papers be prepared and forwarded to London at the earliest possible date. While it is necessary to register every member attending the conference, no subscription is asked for, and the secretaries request that all those who propose to attend and take part register at once, so that all future notices may be sent to them. A room has been set apart in the exhibition to enable members to illustrate their papers or lectures by means of lantern or other apparatus.

All correspondence relating to the congress should be addressed to the secretaries, Fourth International Rubber and Allied Industries Congress, 75 Chancery Lane, London, W. C.

PRINCE ARTHUR WILL OPEN THE RUBBER SHOW

The approval of King George having been obtained, Prince Arthur of Connaught will open the Rubber Exhibition to be held at the Royal Agricultural Hall, London, from June 24 to July 9. The Right Honorable Lewis Harcourt, M. P., Secretary of State for the Colonies, will be present at the opening and will deliver an address on that occasion. It is also expected that the King and Queen will pay a visit to the exhibition during its progress. Thirty-five British and foreign governments are to be represented by exhibits, also many important associations and companies, as well as manufacturers and others connected with the industry.

A LETTER FROM SIR HENRY BLAKE ON THE INTERNATIONAL RUBBER CONGRESS.

MYRTLE GROVE, YOUGHAL, IRELAND.
4th February, 1914.

THE EDITOR, INDIA RUBBER WORLD.

Sir:—At the International Rubber Exhibitions of 1908 and 1911 papers were read by planters, chemists and manufacturers on everything connected with the production of rubber, and discussions followed that brought to bear the experience of experts from every rubber growing country in the world. These papers and discussions were fully reported and reproduced in two books that remain valuable works of reference on every question connected with the industry, in which is engaged so many millions of capital.

As the Fourth Rubber Exhibition and International Rubber Congress opens on the 24th June, I shall be glad if any person who desires to read a paper on any subject connected with the growing, curing or manufacture of rubber, or the possible expansion of its uses, or to take part in the discussions, will kindly communicate and register their names as early as possible with the honorary secretaries of the International Rubber Congress, 75, Chancery Lane, London, W. C.

I am, your obedient servant,

HENRY A. BLAKE, G. C. M. G.
President.

INTERNATIONAL CONFERENCE OF TROPICAL AGRICULTURE, LONDON, 1914.

ACCORDING to a preliminary notice the above congress will be held under the auspices of the International Association for Tropical Agriculture, the French and British sections co-operating in the arrangements.

The congress will be held at the Imperial Institute, South Kensington, London S. W., from June 23 to June 30 next. At the morning sessions papers and subjects of general importance will be discussed, while those of a special character will be taken up in the afternoons.

Papers are suggested upon the following and kindred subjects for the morning sessions:

I. Technical education and research in tropical countries. II. Labor organization and supply in tropical countries. III. Scientific problems of rubber production. IV. Methods of developing cotton cultivation in new countries. V. Problems in fibre production. VI. Agricultural credit banks. VII. Agriculture in arid regions. VIII. Problems in tropical hygiene and preventive medicine.

For the afternoon meetings papers are invited on the following topics:

I. Problems relating to tropical agriculture and forestry. II. The cultivation and production of rubber, cotton, fibres, cereals, tobacco, tea, coconuts, other agricultural and forest products. III. Plant diseases and pests affecting tropical agriculture.

The president is Professor Wyndham R. Dunstan, director of the Imperial Institute, London; the vice-presidents including representatives of Belgium, Brazil, British India, Egypt, Ecuador, England, France, Germany, Italy, Mexico, Netherlands, Portugal, Russia, Spain and Turkey.

Among the members of the congress will be Mr. M. Kelway Bamber, government chemist, Ceylon; Professor P. Carmody, director of agriculture, Trinidad; Professor J. B. Harrison, director of Department of Science and Agriculture, British Guiana; Mr. L. Lewton-Brain, director of agriculture Federated Malay States; Mr. R. N. Lyne, director of agriculture, Ceylon; Mr. F. A. Stockdale, director of agriculture, Mauritius, and Mr. W. S. D. Tudhope, director of agriculture, Gold Coast.

Communications should be addressed to: The Organizing Secretaries, Third International Congress of Tropical Agriculture, Imperial Institute, London, S. W.

Members of the congress will be entitled to free admission to the rubber exhibition then taking place at the Agricultural Hall, Islington, London.

CONTINENTAL RUBBER STATISTICS.

FOLLOWING are statistical details affecting some of the principal countries of Continental Europe.

FRANCE.

Imports and Exports of Crude Rubber for 10 Months ending October 31.

IMPORTS FROM—	1911.	1912.	1913.
Brazil	2,401	3,829	3,079
England	3,918	4,531	4,564
French Congo	280	57	102
Senegal	461	280	147
Other French West Africa..	1,425	1,554	1,497
British Indies.....	651	565	577
Other countries.....	5,287	4,669	4,633
Total	14,423	15,494	14,599
EXPORTS TO—	1911.	1912.	1913.
Germany	1,513	1,299	1,173
England	3,170	2,113	2,798
United States.....	2,157	3,046	1,996
Other countries	3,336	4,200	3,011
Total	10,176	10,658	8,978

GERMANY.

Imports and Exports of Crude Rubber for 10 Months ending October 31.

IMPORTS FROM—	1912.	1913.
Brazil	6,247	4,993
Mexico	1,649	497
British Indies	1,729	3,882
British Malacca	570	623
Ceylon	572	1,010
Dutch Indies	907	930
Belgian Congo	1,548	1,568
Cameroons	1,790	1,555
Other countries	3,554	3,625
Total	18,566	18,683
EXPORTS TO—	1912.	1913.
Belgium	149	113
France	161	147
Great Britain	335	269
Austria-Hungary	496	509
Russia	567	355
United States	2,434	1,825
Other countries	302	242
Total	4,444	3,460

NETHERLANDS.

	1912.	1913.
Imports (10 months).....	2,183	2,037
Exports (10 months).....	191	338

BALATA.

	1912.	1913.
Imports (10 months).....	687	1,016
Exports (10 months).....	191	337

RUBBER SCRAP, ETC.

	1912.	1913.
Imports (10 months).....	6,006	4,190
Exports (10 months).....	5,348	4,789

RUBBER SUBSTITUTES.

	1912.	1913.
Imports (10 months).....	686	608
Exports (10 months).....	180	380

BELGIUM.

CRUDE RUBBER.

	1912.	1913.
Imports (for year).....	11,410	12,087
Exports (for year).....	8,550	8,698

ITALY.

CRUDE RUBBER.

	1912.	1913.
Imports (for year).....	3,390	2,156
Exports (for year).....	329	569

SWEDEN.

CRUDE RUBBER.

	1912.	1913.
Imports (for year).....	735	839

AUSTRIA-HUNGARY.

CRUDE RUBBER.

	1912.	1913.
Imports (for year).....	2,604	2,749

GERMAN EXPORTS OF RUBBER GOODS IN 1913.

Provisional statistics show that exports of German rubber manufactures rose in quantity from 18,276 tons in 1912 to 19,706 in 1913, showing an increase of about 8 per cent. The value showed an advance from the equivalent of about 30 million dollars to 32 million dollars, or a gain of only about 6 per cent. owing to the lower range of prices which prevailed in the export trade. The classification of exports for 1913 shows: soft rubber goods 18,273 tons and hard rubber goods 1,433 tons.

SILVER JUBILEE OF KOMMERZIENRAT LOUIS HOFF.

KOMMERZIENRAT LOUIS HOFF, the well-known director general of the United Harburg-Vienna Rubber Factories, celebrated on January 15 the twenty-fifth year of his connection with that company. His commercial apprenticeship began in 1866 with the Hamburg import firm of D. & L. Oppenheim, after which he visited England, France and the United States. Fol-



KOMMERZIENRAT LOUIS HOFF.

lowing his return to Europe in 1876 he started business in Paris, undertaking the agency of the above-named Harburg concern for France, Spain and Portugal, and making in 1887 an extended trip through North and South America. His success having come to the notice of the board, he was called to Harburg in January, 1889, as representative of the business director, Herr Gerig, after whose death in 1891 he was entrusted with the commercial management of the company in which he has been so successful, particularly in the export trade.

Herr Hoff, being deeply interested in the whole German rubber industry, was appointed chairman of the Central Committee of German Rubber Factories, his success in the development and strengthening of that committee being generally recognized.

Among honors conferred upon Herr Hoff has been the German Order of the Red Eagle, for the establishment of the International Galalith Co., as well as the title of Royal Prussian Counsellor of Commerce. He is a member of the Harburg Chamber of Commerce and upon the Committee of the United German Chambers of Commerce, as well as on the Railway Council.

For the last 10 years he has been a national adviser for the development of import and export trade, having also taken an active part in the administration of the various benevolent funds connected with his company.

On the occasion of the twenty-fifth anniversary of Herr Hoff's association with the United Harburg-Vienna Rubber Factories he received congratulations not only from all the rubber men of Germany, but from friends situated in the four quarters of the globe, all of whom felicitated him on the completion of a quarter of a century of successful association with the great company that he directs and wished him still many years of activity in the management of that company and in his efforts for the general welfare of the trade at large.

THE GERMAN TIRE TRADE DURING 1913.

While the German tire trade for 1912 was by no means satisfactory, that of 1913 failed to show the anticipated improvement. In fact, under the pressure of foreign competition, a reduction in prices became necessary in June, followed by a further one later on. According to German opinion, the prices of automobile tires are now so low that it is a matter of doubt whether first-class qualities can be delivered on the present basis. The small and medium-sized dealers are to a large extent eliminated from the German automobile tire business. Even in the large cities, the business has got into the hands of a few large firms.

Bicycle tires were formerly a relatively profitable section of the trade, as long as the large factories did not cut prices, but when the recent fall in rubber commenced, some of them announced reductions. Instead of improving their qualities, owing to the lower prices of rubber, they commenced a general price cutting, leading to a depreciation of the article.

The opinion has been expressed that the rubber factories should consult together as to how the present intolerable conditions can be remedied, particularly as to advancing prices for automobile tires; abolition of mileage guarantees; establishment of minimum prices for bicycle tires, and sales of seconds. It is also proposed to abolish the guarantees hitherto usual for bicycle tires, those afforded by the law being regarded as sufficient.

OPPOSITION IN GERMANY TO RENTING OF MOTOR VEHICLES.

In a letter to the "Radmarkt und Motorfahrzeug," Herr Witold Milz, president of the Alliance of German Automobile and Bicycle Dealers, states that German dealers in those branches are making an organized opposition to the system of renting. In one instance, 60 dealers in a South German city became, within a few days, members of the above association, which has for its object the abolition of that system. Various important companies which some years ago were pushing this kind of business, are now making united efforts to be free from it. In Bremen, the dealers have decided to abandon the plan as hurtful to the best interests of the trade.

SPORTING GOODS IN THE GERMAN RUBBER INDUSTRY.

Within the last few years there has been such a development of athletic sport in Germany, with an accompanying demand for the various appliances that go under the head of "sporting goods"—including many rubber devices—that the German manufacturers have not been able fully to meet this demand. Consequently the large English houses in that line have been pushing trade with German dealers, and have been doing quite a satisfactory business.

The German manufacturers in this line gradually obtained recognition and, it is claimed, can today withstand any foreign competition. Yet the idea prevails in Germany that foreign sporting goods are preferable to domestic products. The German manufacturers are therefore trying to disprove this assertion.

Balls (tennis, hockey, cricket and golf) are in good demand, as well as football bladders. German balls have met with approval in foreign contests and tournaments, it being stated that their merits are demonstrated by the important shipments made to foreign countries. The most salable articles are those for hockey (outdoor and indoor), light athletics and football. Ankle supporters and protectors, gloves, knee protectors and other appliances used by players are also in demand.

In 1916 the Sixth International Olympiad will take place at Berlin, in which pupils of schools and academies, as well as army and navy officers and men, are invited to participate, and in preparation for which annual contests will meanwhile take place. There is no doubt that sport is making more and more progress in all classes of the German population.

RUBBER NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

THE announcement has been made that the Government is drafting a bill to give effect to some of the recommendations of the Balata Committee, which issued a comprehensive report in 1912 offering certain suggestions for removing the difficulties created by the absconding of laborers after they had received an advance in wages prior to their going into the hinterland. According to the announcement recently promulgated, the Government proposes to go a great deal ahead of the recommendations of the Balata Committee, which were disapproved of by the Institute of Mines and Forests, the body most intimately concerned. At the present time the institute registers and contracts laborers for the forest industries. It appears that in the bill that is being drafted by the Government both registering and contracting are to be done by the Lands and Mines Department. This will to all intents and purposes leave the institute without an occupation, and means the practical extinction of that useful organization, which was formed more than 20 years ago to deal with the difficulties existing at that period between employer and laborer in the gold industry.

In order to understand the position more clearly and to estimate the justice and wisdom, or otherwise, of the Government's action, it is desirable to recall the origin of the Balata Committee. There has always been a certain amount of absconding going on in the balata industry, and there always will be so long as the advance system prevails. The advance system is likely to prevail for many years yet in the peculiar conditions under which the balata industry is being conducted. The laborers have to make long journeys into the interior, where they remain bleeding the balata trees for many months in the year. Before they go they obtain an advance upon their earnings, which they sometimes leave with their families, and which more often they use for a final "spree" before leaving for their self-imposed exile in the interior. The system is an old one and time honored, and it would not be easy to conduct the hinterland industries without it.

Nor was the system a very harmful one in the old days, when the demand for labor was moderate, and the output of balata was, like the number of companies engaged in the industry, comparatively small. But an echo of the great rubber boom of 1910 was heard in this colony. All sorts of companies, good, bad and indifferent, were formed for exploiting the British Guiana balata industry. The demand for laborers enormously increased. The competition—it was a very unhealthy competition—took the form of offering the balata bleeder better advances. The temptation proved too great for him. He found that he could get an advance of as much as \$60, and instead of fulfilling his contract he would register elsewhere in a different name, sign another contract and secure another handsome advance. This trick was performed with success sometimes repeatedly, and laborers found it easier than working. When they were caught, as they most frequently were, and taken before a magistrate charged with breach of contract, they accepted their punishment philosophically. It was found that four months' imprisonment without the option of a fine had no terrors for these swindlers with a sporting instinct; and the Balata Committee was appointed to deal with what was undoubtedly a most serious situation, and to try and devise a remedy.

That committee was appointed fully two years ago, and presented its report in July, 1912. It is now February, 1914, and no action has been taken. In the interval the extraordinary difficulties to deal with which the Balata Committee was appointed have vanished. Many of the companies that were responsible for the extravagant competition in advances have disappeared, unable to bear the strain they themselves imposed. The companies that remain have come together and the local managers have agreed upon a scale of advances—already reported in the

INDIA RUBBER WORLD—that is fair and reasonable. The employers have themselves, by means of a little judicious combination, adjusted the situation which has again reverted to the normal.

Under these circumstances it is permissible to doubt the wisdom of the Government in allowing the virtual extinction of the Institute of Mines and Forests, a useful body, which has done good work in the past and will undoubtedly do good work in the future. The Balata Committee itself supplied the best defence of the institute in quoting the words of the secretary, Mr. James Winter, who, in the course of his evidence, said: "They inquire into wage disputes, sue for the laborers, pay off laborers at a commission of 1 per cent., selecting the laborers and seeing that they go, arresting absconders, giving information to employers," etc. The Balata Committee said: "We cannot conceive of any Government department performing these functions." They are very important functions and immensely useful to the employer. If the institute's principal source of revenue is taken from it, however, it is difficult to see how it can discharge these functions. The local press disapproves of the Government's proposals. It would appear that the policy proposed would be a serious mistake.

BALATA EXPORTS FROM BRITISH GUIANA.

Georgetown advices state that the more favorable weather in 1913 led to increased exports of balata from British Guiana, as compared with the previous year. The figures are: 1912, 639,729 pounds; 1913, 1,172,501 pounds—the bulk of which is reported to have gone to the United Kingdom.

NOTES FROM DUTCH GUIANA.

By a Resident Correspondent

THE BALATA PRODUCTION FOR 1913.

THE balata industry has made a tremendous advance during the year just closed, and yet it would appear that considerable further expansion is in sight. The number of new concessions taken out during last year and which have been prospected and proved rich in balata-producing trees predicts for the 1914 season an unprecedented crop.

The weather during the middle of last year, however, cannot be said to have been entirely satisfactory, from the fact that when tapping was at its height a period of dry weather lasting four or five weeks interfered considerably with the operations, which had to be suspended. Had this not taken place the production would have been nearly double the following figures. We take these figures from the Customs Department.

	Pounds.
Concession balata.....	2,449,957
Private lands balata.....	51,720
Total production for 1913.....	2,501,677
Total production for 1912.....	1,600,611

It is interesting to record that the quality of balata brought into town during the year has been much better than on previous occasions. The color and thinness of the sheets call forth commendation from all quarters. This, no doubt, has much to do with the present good prices, for buyers of the product had been complaining of the quality of the article and better prices are paid for good, clean, thin sheets. The collectors have practically refused to take over from the bleeders balata of inferior appearance, being unable to dispose of it, as local buyers refuse to accept quality that fails to come up to standard.

It has been estimated that over 5,000 men were engaged in actual bleeding operations during 1913, and this will also account for the great numbers who flocked into town to spend the Christmas holidays, when quite a bit of money changed hands. The bush-men, with few exceptions, have had a good time, and the

motor car owners, who have been kept busy day and night, would be pleased if Christmas came twice a year, for the balata men are their best customers. All the public houses did a good trade. The dry goods shops were not forgotten, for the bleeder under any circumstances must have a new outfit for Christmas.

It may be interesting to note that altho the prices and advances paid to the men were very much reduced from those of the past, in no case have we heard of serious objections or murmuring. This goes to prove that the balata men are not so unreasonable as many represent them.

We understand that new legislation for the industry will soon see light. It is to be hoped it may be so framed that both capital and labor will be properly safeguarded. The old regulations were certainly one-sided. There is much room for improvement in the balata business if the authorities will only do the right thing and foster the industry, which is at the present time the colony's main support, and, in fact, the only industry whereby the bulk of the population gains a livelihood.

The holidays are all over, and before this letter is published the men will be at their posts on the grants and many tons of balata have been produced. Every one is looking forward to a fine harvest for 1914, and should weather conditions be favorable their expectations cannot fail of realization.

It may be of interest to show what the exports of the colony are, in addition to the balata exports. The general export figures given below are taken from the official reports:

EXPORT OF COLONIAL PRODUCTS DURING 1913

Balata (pounds).....	2,609,050
Bananas, fresh (bunches).....	1,368,690
Bananas, preserved (pounds).....	1,162,434
Cocoa (pounds).....	1,162,434
Coffee (pounds).....	454,472
Hard wood (cubic feet).....	140,800
Letter wood (pounds).....	247,469
Hides (pounds).....	100,899
Rum (gallons).....	244,353
Sugar, V. P., finest crystal (pounds).....	21,688,676
Sugar, common process (pounds).....	1,869,608
Gold, native (grammes).....	856,768½

BALATA INDUSTRY OF SURINAM.

It is reported that the Surinam balata exploitation of the firm of Ter Laag & Co. has been taken over by a London company organized for that purpose.

The reported fusion of the Demerara Consolidated Rubber Co., the Balata Co. of Surinam and the Balata Co. of Guiana, has been contradicted, tho the possibility has been discussed in Surinam business circles of such an arrangement being ultimately effected.

CENTRAL AMERICAN NOTES.

Exports of rubber from the Bluefields districts of Nicaragua to the United States in 1912 amounted in value to \$207,748, in 1911 to \$214,960.

Crude rubber exports from Guatemala have materially decreased since 1910, when they reached a value of \$175,309, having amounted in 1911 to \$159,621, and in 1912 to only \$140,768. There is no local consumption of the article, much the larger part of which is gathered from wild trees.

Exports of chicle—collected chiefly in the northeastern portion of the Republic, in the forests of the Peten region—have, however, considerably increased, amounting in 1910 to 322,515 pounds valued at \$102,095, in 1911 to 478,172 pounds valued at \$150,902, and in 1912 to 870,925 pounds valued at \$274,852. Of the total exports almost 60 per cent. of the rubber and 56 per cent. of the chicle was consigned to the United States.

THE RUBBER CRISIS IN BOLIVIA.

A GOVERNMENT report recently published in Bolivia states that this is the second time since 1882 that an extracting industry has passed through a crisis. This time it is the rubber industry, which has got into great difficulties through the fall in price of that article. Since 1880 wild rubber trees have been tapped in Bolivia, attention being given only to current conditions, without any thought for the future.

The reason of the falling off in Bolivian rubber exports is obvious enough—the cause lies in the Eastern plantations. The plantations in the Middle and far East were first laid out in 1898, but it was ten years later, 1908, before any considerable quantity of plantation rubber came on the market. In that year the plantation product amounted to 2,120 tons which, however, the following year jumped to 12,800 tons and in 1912 increased to 28,500 tons; while in 1913 the product was certainly in excess of 40,000 tons. This plantation rubber has the tremendous advantage of low cost. It is collected from trees set a few feet apart, by laborers whose wages are low, and is transported over fine highways—and the whole enterprise backed by abundant capital.

It is estimated that the cost per pound of producing rubber in Bolivia equals about 29 pence, or 58 cents, while in Asia it represents about 11 pence, or 22 cents. Thus the cost of Asiatic rubber is 18 pence, or 36 cents, lower than that of Bolivian. Moreover, account must be taken of the loss in weight of Bolivian rubber caused by drying during the long transport.

The plantation coolie gets 6 pence (12 cents) a day, and in 20 days can gather about 220 pounds; while the Bolivian worker collects from 6 to 10 pounds a day, for which he receives 69 to 111 pence (\$1.38 to \$2.22) per pound.

As to the Bolivian rubber gatherer, the only thing in his favor is the quality of the product, which is further improved through the preparation by smoking, which gives it more nerve than when coagulation is produced by chemical means.

From the above explanations it will be seen that any material advance in the price of rubber is not to be looked for, so that efforts should be directed to lowering the Bolivian cost of production. Among the measures recommended are:—Construction of railways; laying out of rubber plantations; reduction of export tax; improvement of sanitary conditions in the rubber territory; instruction in various advantageous methods of tapping, and the obtaining of a thoroughly uniform product. Efforts are also to be made to induce the Indians of the elevated plateaus and the hard working population of Cochabamba, in the vicinity of the Chilian Provinces of Tarapaca and Antofagasta, to go to the rubber districts. Through giving land to the Bolivian families, the State can form colonies, not only for the rubber industry, but also for agriculture.

Conditions existing in Bolivia thus seem to correspond more or less with the situation in Brazil, and to have led to the suggestion of like remedies.

MEXICAN NOTES.

Reports from the State of Tabasco, Mexico, show that a number of the plantations in the southern part of that state and in northern Chiapas are gradually dying and that extensive areas are to be abandoned, having been found unsuited to the cultivation of rubber trees. Imports from this district into the United States amounted in 1911 to \$369,530, in 1912 to \$353,578.

Importations of motor cars into Panama average about a dozen a year, the number now licensed being in the neighborhood of 120—all gasoline and with two exceptions of American manufacture. Imports of cars from the United States amounted in 1912 to \$19,800, from France, \$809.

MR. DA COSTA INVENTS A NEW COAGULATING MACHINE.

MRS. S. MAO DA COSTA, of Rio de Janeiro, prominent for years in the South American rubber trade because of his various inventions, expects soon to put a coagulating machine on the market which will be used in the rubber camps, coagulating latex on an endless mandrel in thin pellicles by the use of smoke. These pellicles or thin films of rubber are wound around



S. MAO DA COSTA

the mandrel, and then rolled out flat and tall, which is subjected to just enough pressure to expel the surplus moisture and to give it shape convenient for handling. Rubber coagulated in this way will enable the manufacturer to avoid the process of cutting, steeping in hot water and macerating, through which crude rubber now has to pass; and as the latex will be poured on the machine from the tree, much unnecessary transportation will be avoided. The inventor believes that he has devised a machine for doing mechanically and quickly what the *seringueiro* now does laboriously and slowly by hand.

PRODUCTION OF FINE RUBBER IN BRAZIL

In a circular to the proprietors of *Seringaes*, the Revista (or Review) of the Commercial Association of Amazonas, urging the advantages of the smoking process, says:

"As this method tends to the production of a high quality, it is the only one adapted for our industry, provided it is carried out in such a manner as to assure the rubber being classed as 'fine.' Of the 42,000 tons annually produced by Amazonia, scarcely 17,000 is of fine rubber. It is this 17,000 tons which constitutes by its superior quality our capacity of resistance to the competition of the East. . . . It is for us to improve as much as possible our process of smoking and to increase our product of 'fine' rubber, avoiding as far as possible the production of the other less remunerative qualities."

EFFECTS OF BRAZILIAN RUBBER SLUMP.

In an official report Mr. G. B. Michell, British consul at Pará, comments upon the effects experienced in Northern Brazil on account of last year's slump in prices, the losses having extended to every line of business. He adds that for many years the people of the Amazon valley have sacrificed everything to the collection of rubber, having planted nothing, not even rubber trees. They have, moreover, neglected all cultivation of food stuffs. Every ounce of dairy produce is imported under a heavy import duty. Living is

almost insupportably dear through the manner in which the commonest items of a laborer's food are taxed.

PARÁ RUBBER AFLOAT.

An English return shows that on February 1, there were 1,050 tons of Pará rubber in transit to Europe, as compared with 1,750 tons at the corresponding date last year. The quantity afloat for America, at the date named, was, in 1914, 980 tons as against 1,350 tons in 1913. These figures are thought to indicate that supplies are being kept back at Pará, in the anticipation of better prices being obtainable later on.

SOUTH AMERICAN NOTES.

A commercial review of Eastern Brazil shows that rubber goods to the value of \$30,578 were imported into Bahia in 1912, rubber exports from that port for the same year amounting to 1,683 tons (valued at \$1,600,647), an increase of 19 tons over those of the preceding year. Of the rubber shipped from this market—the bulk of which is of the class known as *Maniçoba*—about two-thirds is said to be purchased by American manufacturers, shipments to the United States in 1911 representing a value of \$1,004,068, and in 1912 \$1,030,084. Shipments from Pernambuco into the United States in 1911 and 1912 were valued at \$3,848 and \$5,954, respectively, from Maceio \$269 and \$166, and from Ceara in 1911—the only year for which figures are shown—\$351.

Rubber exports from the consular district of Ceiba, Venezuela, are reported as representing in 1911 a value of \$32,735, and in 1912 of \$51,309—the total for both years having been shipped into the United States.

The value of the rubber exported from Colombia in 1912 was \$736,427.

EASTERN NOTES.

A detailed statement has been prepared by the Director of the Agricultural and Commercial Service of Cochin China showing the status of rubber cultivation in that section, from which it appears that 168,000 of the 494,200 acres of land thought to be suited to *Hevea* rubber have been taken up, and that of this area 29,625 acres are actually under cultivation, the plantations having an aggregate of 3,800,000 trees, averaging in age 2½ years. None of the estates, with the exception of the Government Experiment station—known as the Belland Estate—are yet producing on a commercial scale, but some experts express the opinion that the soil and climate are not so well adapted to the *Hevea* as are those of the Straits and Ceylon, and that the same yield per tree cannot be obtained. Exports of rubber from Cochin China in 1912 amounted to 72 metric tons (158,731 pounds). On the basis of the planted area it is estimated that by 1920 the annual production will have reached between 3,500 and 4,000 tons.

The value of Samoa's rubber exports for 1912 was \$26,359, of which quantities to the value of \$19,810 were sent to Germany, \$5,343 to other European countries, and \$1,206 to Australia.

Siam exported, in the year 1912-13, 229,234 pounds of rubber—an advance of 221,393 pounds over the exports of the preceding twelve months.

The area of the colony known as the Straits Settlements is 1,599.7 square miles, consisting of a number of small islands in the archipelago and small tracts on the mainland of the Malay peninsula—embracing the Settlement of Singapore (including the Islands of Singapore, Labuan, Christmas Island and Cocos-Keeling Islands), the Settlement of Penang (including the Penang Island, Butterworth and Dindings), and the Settlement of Malacca. Of this area 1,038,000 acres are under cultivation, 94,263 acres being devoted to rubber growing. The exports of Straits produce for 1911 included 22,840 tons of "rubber, gutta percha and gutta jelutong"; for 1912, 21,726 tons. Of these exports the United States took in 1911 quantities valued at \$3,537,170; in 1912, \$6,138,997.

RUBBER EXPORTS FROM NETHERLANDS INDIA.

ACCORDING to the following statistics, sent by United States Consul Bradstreet S. Rairden, of Batavia, last year's rubber exports of Netherlands India amounted to 4,130 tons, including Java 1,393, and other islands 2,737 tons. In the latter amount are included exports of 1,973 tons for East Sumatra. For comparison three years' statistics are quoted:

	Islands other than Java.			Java.			Total.		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Belgium	17	68	1	18	1	63	17	69	1
Germany	11	4	1	1	1	191	11	5	192
Great Britain	11	1	1	1	1	1	11	2	2
Netherlands	45	63	260	39	181	805	84	244	1,065
Straits Settlements	2,330	1,674	2,250	3	25	3	2,333	1,699	2,253
Other countries	1	1	1	1	1	1	1	1	1
Total	2,697	1,894	2,737	71	360	1,393	2,768	2,254	4,130

The distribution of the several varieties of rubber is shown as follows:

Islands other than Java	1,894	1,674	2,250
Java	360	1,811	805
Total	2,737	3,485	3,055
East Sumatra— <i>Ficus</i> , 467 tons; <i>Hevea</i> , 1,489 tons; other kinds, 17 tons.			
Total, 1,973 tons.			

THE INTERNATIONAL RUBBER CONGRESS AND EXHIBITION AT BATAVIA.

AN international rubber congress will be held at Batavia, Java, September, 1914. Owing to the large investments of foreign capital in the Netherland East Indies, the holding of an international exhibition is distinctly appropriate. About five-sixths of the \$92,500,000 foreign investment is English, the bulk of the remainder being Belgian; while the American proportion is only \$6,000,000.

With the view of attracting further capital, a strong and influential local committee has been appointed, including a number of leading officials, bankers and merchants.

A committee for Malaya has also been formed with such representative members as Mr. L. Lewton-Brain, director of agriculture, Kuala Lumpur; Mr. I. H. Burkhill, director Botanical Gardens, Singapore, and Mr. R. W. Munro, chairman Planters' Association of Malaya.

The Netherland committee includes a number of prominent men in Holland, while the Executive Council (on which devolves the work at the scene of action) has for president, Major-General J. G. H. De Voogt, Batavia, and for vice-president, Dr. W. R. Tromp de Haas, director of government rubber and gutta percha estates. Five committees second the efforts of the Executive Council.

The program is a dual one. A congress will be held from September 7 to 12, and the exhibition will last from September 8 to October 10. The congress will be divided into eight sections, comprising the whole range of the subject of rubber, upon which it will be addressed by leading authorities, and which will ultimately be discussed in joint sessions. In order that those interested may become acquainted with manufactured rubber goods, an exhibition of these will be held in addition to that of crude rubber. Machinery should arrive at the Exhibition grounds before July 10, while other exhibits should reach Batavia before August 1. The catalog is in preparation and will be printed, to the number of some ten thousand copies, in English and Dutch.

Various important demonstrations will take place during the exhibition; among others the Byrne patents, the property of the Rubber Curing Patents Syndicate, Kuala Lumpur, will be exhibited. The Botanical Gardens, Singapore, will also send an exhibit.

Applications for space should be made before April 1, to the Netherland Committee, the president of which is Mr. G. Vissering, president of the Netherland Bank, Amsterdam; or to Messrs.

Ruijgrok & Co., Haarlem (Holland). In view of the influential support it is receiving, marked success is predicted for this important event.

The Semarang (Java) Colonial Exhibition, which will take place about the same time, will not in any way conflict with the Batavia display, as the former will omit all reference to rubber.

Since writing the above general description of the proposed Batavia Exhibition, the "Guide to Visitors" has come to hand. It contains a folding plan of Batavia and a map of Java. A full list is also given of the various sub-committees and their constituent members, in Java and in Europe.

The Exhibition Jury will consist of five sections, distributed as follows:—Section 1, Botany, diseases, literature and scientific testing; Section 2, Cultivation, tapping and preparation; Section 3, Wild rubber, substitutes and gutta percha; Section 4, Economy, trade and statistics; Section 5, Vulcanized caoutchouc.

A series of excursions is being planned by the Official Tourist Bureau in connection with the exhibition. The "Guide to Visitors" contains the names of the individual experts intending to take part in the congress, with the subjects they propose to treat.

THE COLONIAL EXPOSITION AT SEMARANG

While the Batavia Exhibition is especially devoted to the rubber industry, the Colonial Exposition at Semarang is intended to illustrate the progress of Dutch commerce within the last century and particularly during the last ten years. Its special object is to commemorate the centenary of the return of the Netherlands Indies under Dutch rule in 1814, on the fall of the Napoleonic dynasty.

The exposition to some extent overlaps that of Batavia, as it opens August 13 and closes November 15.

In a neat booklet the administrative body has outlined the plan and objects of the display, which has the following divisions:—colonial government, agriculture, domestic industry, foreign industry, commerce and traffic.

An effort will be made to practically illustrate the advantage presented by the Dutch East Indies to European commerce. Java, Sumatra, Borneo and Celebes are the principal islands, and the growth of their united commerce is indicated by the following returns:

	Imports.	Exports.
1900.....	\$73,000,000	\$100,000,000
1910.....	130,000,000	180,000,000

Sugar and hides are the most important articles of export, while dry goods and flour are the largest imports. The Semarang exposition will not deal with rubber and will thus not conflict with that of Batavia, while the latter in handling only rubber leaves a clear field for its colleague. Machinery will form an attractive item for the planters of the island, and it is hoped that American manufacturers will avail themselves of the opportunities thus afforded them.

Mr. T. Greidanus, of 136 Water street, New York, is the representative of the Exposition for the United States.

PROPOSED RUBBER GOODS FACTORY IN JAVA

A new industry is said to be in course of establishment at Sourabaya, Java, in the form of a factory for the Dunlop Rubber Co., the well-known English tire firm. The factory is to be situated at Ketabang, near Sourabaya, in the vicinity of the Regent's residence, and is intended for the production of all classes of rubber goods, which have hitherto been imported. The company has been investigating the question of the climate and claims to have proved that the goods made in Java will fully compete with imported products and will well withstand the climatic influences to which they would be subjected in manufacture. It is further reported that the Dunlop company contemplates the erection of factories at Singapore and Penang.

Some Rubber Planting Notes.

COMPARISON OF CEYLON SMOKING PROCESSES.

At a recent meeting of the Committee on Agricultural Experiments, held at Peradeniya, specimens were exhibited of the products smoked respectively by the Wickham process and by that of the Colombo Commercial Co. at Peradeniya. A comparison of the results obtained by the two processes showed the following details:

	Wickham.	Commercial.
Fuel	30 pounds	78 pounds
Time	50 minutes	50 minutes
Latex	17 pounds	23 pounds
Rubber	12 pounds	17 pounds

Both the specimens were pronounced to be of superior quality and are to be sent to the Rubber Exhibition to take place in London next June.

Much attention was attracted by blocks of rubber treated by the Byrne and other processes.

CEYLON AND THE LONDON RUBBER EXHIBITION.

Mr. R. N. Lyne, Director of Agriculture of Ceylon, has been appointed commissioner for that island at the London Rubber Exhibition. According to a recent statement, the contributions towards the expense of the representation of Ceylon equaled \$3,866, of which \$2,833 had been subscribed in London and \$1,033 in Ceylon.

PRIZES TO ESTATE SUPERINTENDENTS.

The Rubber Growers' Association announces the three following prizes in the form of silver cups, to be awarded at the forthcoming Rubber Exhibition, to estate superintendents or assistants: John McEwan's cup, for the best exhibit from whatever source; Thomas North Christie's cup, for the best exhibit produced in Ceylon; and F. L. Hamilton's cup, for the best specimen from the Federated Malay States or the Straits Settlements.

Only one cup will be given any prize winner. The cups are to be awarded awards to the superintendents or estate assistants who will be responsible for the successful exhibits. It is advisable for those intending to compete to send forward their names and have their responsibility definitely admitted. These prizes are intended to encourage those on whom devolves the arduous task of producing the high grades of rubber.

FEDERATED MALAY STATES RUBBER EXPORTS.

According to figures sent by the government to the Malay States Information Agency, the exports of rubber from the Federated Malay States for the month of January amounted to 2,542 tons, as compared with 2,131 tons in January, 1913, and 2,616 tons in the month of December last.

Rubber exports from the Federated Malay States aggregated in 1911, 19,695,330 pounds; in 1912, 34,732,415 pounds, and last year, 1913, 52,557,409 pounds.

THE TEA-CUM-RUBBERS BECOME "RUBBER-CUM-TEAS."

In the East there are certain plantations that are known as "Tea-Cum-Rubbers" which, being interpreted, means "tea with rubber." This designation is applied to plantations which were originally established solely for the production of tea and to which the production of rubber has been more recently added. But in some of these plantations the rubber has become so much more important as an item of revenue than tea that "tea-cum-rubber" is a designation no longer accurate, and the proper name of the designated description would be "rubber-cum-tea."

COOLIES' WAGES IN MALAYA.

At a recent meeting of planters of the Malayan peninsula the question was discussed of a possible reduction of coolies' wages,

in harmony with the prevailing low prices of rubber. The proposal was rejected by the meeting, it being considered that with lower wages it would be impossible to obtain a sufficient supply of East Indian laborers.

RUBBER SHAREHOLDERS' ASSOCIATION.

A circular was lately issued to shareholders of rubber companies inviting them to join the above association, which advocates the establishment of a joint selling agency. It announced that it started with a clean slate and an open mind as to how the questions of standardization and estate management could be most effectively dealt with.

NEW BUILDING OF THE DELI TESTING STATION, MEDAN.

The new building of the Deli Testing Station at Medan, Sumatra, has been recently opened.

In the library there are a great number of practical works, while a reading room and photograph room supplement the other facilities of the new building. The last named room is intended for the development of photographs to be used by the testing station in its "communications."

A CROP TO GO WITH RUBBER.

The Cotton Committee of the German Colonial Association has taken up the question of some staple crop to be interplanted with rubber. Amongst the varieties of tree suggested by Herr Otto Cantzler, director of the German Colonial Kapok Works, are Kapok, or tree cotton, and oil fruits. The former is being extensively used for upholstery and bedding. Kamerun and Togo are said to be particularly suited to the production of Kapok from Java seed.

PROSPECTS OF INCREASED RUBBER CONSUMPTION.

In discussing the prospects of increased rubber consumption, the director of a large French company interested in the Congo calls attention to the fact that in the period of dear rubber manufacturers had become artists in the production of goods containing a minimum proportion of that material. Now that rubber is cheap they can afford to use as large a proportion as possible, thus wholly or partially eliminating the use of substitutes. Such a course is advocated with a view to the fulfilment of the guarantees upon which customers now insist.

AFRICAN NOTES.

Crude rubber exports from Gabon, French Congo, advanced from 618,200 pounds in 1911 to 673,594 pounds in 1912—the entire quantity being destined for France.

Exports of rubber from the Gold Coast Colony, British West Africa, showed a marked decline in 1912, aggregating only 1,990,699 pounds, valued at \$820,867. Only three times in the last 23 years have they been less, whereas for several years during that period the quantity has been about double the 1912 figures. The 1911 exports amounted to 2,668,667 pounds, valued at \$1,067,610; those of 1910 to 3,223,265 pounds valued at \$1,877,282, and for 1909 to 2,764,190 pounds valued at \$1,282,871.

Statistics of the trade of Madagascar for 1911 and 1912 indicate prosperous conditions in that colony and show an increase in value of rubber exports from \$881,297 in 1911, to \$1,000,016 in 1912.

NEW BUREAU OF ARBITRATION AT AMSTERDAM.

At the recent annual meeting of the Amsterdam Rubber Trade Association, the following were appointed members of the board of the Arbitration Bureau: Mr. J. F. de Beaufort, Mr. P. Van Leeuwen Boomkamp, Mr. J. N. Burger, Mr. P. Joosten, Mr. J. H. Rogge Hezn and Mr. Carel Wynand.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JANUARY 6, 1914.

- N**O. 1,083,293. Pneumatic tire. J. F. Palmer, Riverside, Ill.
 1,083,336. Hand stamp. T. I. Parker, Webster, Mass., assignor to H. S. Folger, Chicago, Ill.
 1,083,344. Hat covering. W. C. Wetmore, Upper Montclair, N. J.
 1,083,354. Insulating compound. T. A. Edison, Llewellyn Park, Orange, N. J.
 1,083,396. Resilient wheel. W. A. Gehringer, Allentown, Pa.
 1,083,440. Tire inflating apparatus. O. Ebert, Ironton, Ohio.
 1,083,466. Erasing device for typewriters. H. I. Seddon, Portland, Ore.
 1,083,470. Corset with a removable elastic abdominal belt. M. Towell, New York.
 1,085,513. Vehicle wheel. C. F. Womeldorf, Washington, D. C.
 1,083,528. Atomizer. C. Fellerer, Freising, Germany.
 1,083,562. Non puncturable pneumatic tire. E. G. Rolff, Sacramento, Cal.
 1,083,584. Air tube for pneumatic tires. W. R. Blowers, Toronto, Ontario, Canada.
 1,083,601. Tire. Paul Richter, Berlin, Germany.
 1,083,644. Non skidder. W. Wenom, Kirkwood, Mo.
 1,083,679. Resilient tire for vehicle wheels. D. H. Donahay, Williamsport, Pa.
 1,083,709. Vehicle wheel. G. F. Tadini, New York.
 1,083,721. Flexible occlusive pessary. A. Asch, Hamburg, Germany.
 1,083,755. Insulating material and process of making the same. J. C. Peabody, Boston, Mass., assignor to The Republic Rubber Co.
 1,083,798. Automobile tire. C. J. Butts, Boston, Mass.
 1,083,843. Massage device. A. F. Luzzi, Waco, Tex.
 1,083,847. System for inflating pneumatic tires. C. P. McDowell, Winlock, and R. H. Easter, Elma, Wash.
 1,083,864. Resilient vehicle wheel. P. H. Shanker, Sydney, New South Wales, Australia.
 1,083,869. Non skid tire shoe. H. Strongson, New York.
 1,083,873. Water bag. F. W. Burch, Pueblo, Col.
 1,083,875. Method of fixing rubber or other tires on wheels. T. K. Clark, Durban, Natal, South Africa.
 1,083,886. Shoe attachment for automobile wheels. J. W. Marston, Jr., Mobile, Ala.
 1,083,891. Resilient wheel for road vehicles. A. Ma De Palacio y Garcia and S. Rubio, Alfajar, Spain.

Designs.

- 45,107. Tire tread. J. R. Gammeter, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
 45,122. Water cushion. C. W. McInecke, Jersey City, N. J., assignor to McInecke & Co., New York.
 45,124. Bathing cap. R. Parker, New York.
 45,128. Nursing bottle. W. Schnippa, Schwepnitz, Saxony, Germany.
 45,130. Rubber mat binding. F. H. Timke, assignor to J. Kroder and H. Ruebel Co.—all of New York.

Trade Marks.

- 73,144. L. C. Chase & Co., Boston, Mass. The word *Drednaut*. For textile fabric coated with rubber or waterproof surface clothing.
 73,195. The Canfield Rubber Co., Bridgeport, Conn. The word *Canfield*. For dress shields.

ISSUED JANUARY 13, 1914.

- 1,083,976. Vehicle wheel. A. R. Wade and J. G. Wright, Beaumont, Texas.
 1,084,003. Garment suspenders. H. J. Gaisman, New York.
 1,084,025. Tire. J. McNamee, Amsterdam, N. Y.
 1,084,029. Anesthetic administering apparatus. J. S. Pyle, Toledo, Ohio.
 1,084,050. Rim for vehicle wheels. H. K. Wheelock, Akron, Ohio.
 1,084,055. Resilient wheel. T. Yochum, Columbus, Ohio.
 1,084,056. Spring tire. H. J. Augustine, Independence, Kan.
 1,084,094. Fountain pen nozzle. J. Lasser, assignor to M. Peel—both of Oakland, Cal.
 1,084,106. Garment for bathing. W. W. Pelton, Chicago, Ill.
 1,084,144. Automobile wheel. E. G. Glaser, North Dover, Ohio.
 1,084,178. Massage vibrator. G. Svendsen, Tune, N. Y.
 1,084,182. Inhaler. G. von Ach, Newark, N. J.
 1,084,197. Ankle support and protector. H. J. Collis, Taunton, Mass.
 1,085,264. A waterproofed resilient instep arch support. P. R. French, Andover, Mass.
 1,084,299. Vehicle wheel. A. Saunier, San Francisco, Cal.
 1,084,302. Vehicle wheel. D. T. Timberlake, St. Louis, Mo.
 1,084,303. Spring vehicle wheel. D. T. Timberlake, St. Louis, Mo.
 1,084,304. Inhaling device. B. C. Vaughn, assignor to Sarah C. Vaughn—both of Pittsburgh, Pa.
 1,084,335. Vulcanized caoutchouc-like substance. F. Hofmann and C. Cou-
 1,084,336. Vulcanized caoutchouc-like substance. F. Hofmann and C. Cou-
 1,084,337. Vulcanized caoutchouc-like substance. F. Hofmann and C. Cou-
 1,084,338. Vulcanized caoutchouc-like substance. F. Hofmann, C. Cou-
 1,084,409. Method of constructing tires. B. H. Divine, Utica, N. Y.
 1,084,421. Spring wheel. A. Gage, Long Lane, Mo.
 1,084,434. Tire protector. F. Holik, Prague, Okla.
 1,084,470. Pneumatic puncture proof tire. F. Newbauer, Valley City, N. D.
 1,084,515. Spring wheel. C. F. Willner, Kansas City, Mo.

- 1,084,335. Vulcanized caoutchouc-like substance. F. Hofmann, C. Cou-
 1,084,336. Vulcanized caoutchouc-like substance. F. Hofmann, C. Cou-
 1,084,337. Vulcanized caoutchouc-like substance. F. Hofmann and C. Cou-
 1,084,338. Vulcanized caoutchouc-like substance. F. Hofmann, C. Cou-
 1,084,409. Method of constructing tires. B. H. Divine, Utica, N. Y.
 1,084,421. Spring wheel. A. Gage, Long Lane, Mo.
 1,084,434. Tire protector. F. Holik, Prague, Okla.
 1,084,470. Pneumatic puncture proof tire. F. Newbauer, Valley City, N. D.
 1,084,515. Spring wheel. C. F. Willner, Kansas City, Mo.

Design.

- 45,148. Vehicle tire. G. W. Daum, Jeannette, Pa.

Trade Marks.

- 74,379. Lambertville Rubber Co., Lambertville, N. J. The word *Lamco*. For rubber boots and shoes.
 74,531. H. P. Rindskopf, New York. The word *Bunny*. Diapers and infants' pants of waterproof fabric of cotton and silk.

ISSUED JANUARY 20, 1914.

- 1,084,620. Vehicle wheel. T. L. Forrester, Denver, Col.
 1,084,648. Resilient vehicle wheel. C. J. Malings, Easthampton, Mass.
 1,084,664. Spring wheel. G. H. Schanck, Libertyville, Ill.
 1,084,731. Resilient tire. D. H. Deery, Bridgeport, Conn.
 1,084,740. Rubber wheels for the heels of boots or shoes. C. A. Matson, Lynn, Mass.
 1,084,840. Pot for collecting resin. J. M. A. Brun, Salles, and G. M. Dauris, Mios, France.
 1,084,842. Lawn sprinkler. J. F. Rustin, Pasadena, Cal.
 1,084,864. Tire. C. M. Lloyd, London, England.
 1,084,866. Solid tire for vehicles and the like. D. Maggiora, London, England.
 1,084,882. Spring wheel. G. J. and H. C. Garrett, Richmond, Ind.
 1,084,895. Pneumatic tire casing repair device. J. N. Newsom, St. Louis, Mo.
 1,084,916. A cushion for billiard tables comprising a rubber strip. M. J. Whelan, Muskegon, Mich., assignor to Brunswick-Balke-Coller Co., of Delaware.
 1,084,957. Antislipping device for shoes comprising elastic strip and suction cups. H. J. Otis, Walton, Ore.
 1,085,009. Diving apparatus for submarine work. M. Bembina and L. Durand, Palermo, Italy.
 1,085,010. Shoe. R. D. S. Bennett, Springfield, Mo.
 1,085,019. Hose supporter. A. H. Coln, Larchmont, N. Y.
 1,085,084. Garden hose support. F. W. Haines, East Malvern, Melbourne, Australia.

Design.

- 45,166. Tire casing. L. P. Destribats, Trenton, N. J.
 45,167. Elastic webbing. F. H. Frissell, assignor to The Russell Mfg. Co., Middletown, Conn.
 45,168. Elastic webbing. F. H. Frissell, assignor to The Russell Mfg. Co., Middletown, Conn.

Trade Marks.

- 72,730. The Spirella Co., Meadville, Pa. Illustration of a collar supporter. Surgical bandages, elastic or surgical stockings, etc.
 73,864. G. Borgfeldt & Co., New York. The word *Kewpie*. Rubber balls, etc.
 73,865. M. J. Field & Co., Chicago, Ill. The word *Imperial*. Oval. For garment shields.

ISSUED JANUARY 27, 1914.

- 1,085,102. Insulating compound. L. E. Barringer, Schenectady, N. Y., assignor to General Electric Co., of New York.
 1,085,120. Hose nozzle. H. Gibbs, assignor to W. D. Allen Mfg. Co.—both of Chicago, Ill.
 1,085,130. Life saving suit. J. Juhasz, Unity Station, Pa.
 1,085,154. Mud shedder for vehicle wheels. H. G. Newsom, Boyce, Tex.
 1,085,312. Overshoe for horses, comprising a rubber pad. R. Whitaker, assignor to The Emergency Horseshoe Co.—both of New Brunswick, N. J.
 1,085,324. Demountable rim. J. Craig, Bedford, England.
 1,085,376. Tire. F. S. Byington, Los Angeles, Cal.
 1,085,408. Automobile tire. W. E. Delehanty, New York.
 1,085,435. Non puncturable resilient wheel. E. Keup, San Francisco, Cal.
 1,085,442. Resilient wheel. F. J. Krudel, Chicago, Ill.
 1,085,513. Vehicle wheel. G. R. Williams, Little Rock, Ark.
 1,085,545. Tire. H. Cooney and O. E. Wiltzie, Marion, Ind.

Trade Marks.

- 68,857. Thermoid Rubber Co., Hamilton township, Mercer county, N. J. The words *Thermoid de Luxe* and *Thermoid Rubber Co.*, Tren-

21,919 (1912). "The Journal of the Royal Society of Medicine," 17, Great Ormond
street, London.

Petersham, near Sydney, Australia.

48, 1913. Spring wheels with continuous outer rim, tire and inner rim, as per L. Fines, "The Rubber," Greenleaf, near Hove, Cheshire, and W. S. Williams, 25 Park Road, Liverpool.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application)

- 460,369 (July 11, 1913). P. L. Dupuy. Cover or pneumatic tire, consisting of endless nested fabric, made in form of a sleeve or circular beam.
- 460,430 (July 16). L. de Mello Marques. Elastic tire for vehicle wheels.
- 460,458 (July 17). W. Porter. Improvements in hollow elastic tires for vehicle wheels.
- 460,506 (July 18). Broun Perfection Tube Co. Improvements in air chambers for pneumatic tires and process of their manufacture.
- 460,519 (July 19). Zieger & Wiedend. Process of making hollow tubes in rubber having the transparency of glass.
- 460,546 (October 7, 1912). De Postis. Mud guard.
- 460,619 (July 17, 1913). E. Andre. Improvements in pneumatic vehicle wheels.
- 460,689 (July 18). F. Ripert. Improvements in manufacture of pneumatic rubber.
- 460,763 (July 26). R. J. Henderson. Improvements in air chambers for pneumatic tires.
- 460,780 (July 26). V. Thomas. Process of vulcanization of rubber objects and similar articles.
- 460,836 (July 28). W. G. Chipley. Improvements in rims and elastic tires.
- 460,872 (July 30). W. Kops. Elastic fabric.
- 460,894 (July 30). C. Lugagne. Mud guard.
- 460,913 (July 26). Societe Anonyme des Combustibles Industriels. Process for manufacture of a plastic and rubber-like substance specially intended for application to roads or for other purposes.
- 460,961 (July 12). E. Breuer. Air chamber for tires and other purposes.
- 461,093 (August 4). E. Kemper. Process and appliance for the extraction of gum from parts of vegetable substances.
- 461,116 (August 5). H. B. Clayson. Improvements in elastic vehicle tires.
- 461,153 (August 6). C. P. E. Robert. Improvements in manufacture of rubber nipples.
- 461,157 (August 6). E. Aimond. Wheel tire.
- 461,232 (August 9). A. Heinemann. Improvements in the manufacture of synthetic rubber.
- 461,377 (August 9). G. T. Vallee. Insulating, shock absorbing and anti-vibration composition and its applications.
- 461,247 (August 9). M. Dechamps. Interchangeable or rotary perforated rubber wheel tire.
- 461,258 (June 24). P. P. Despins. Vulcanizer.
- 461,299 (August 2). A. de Laigne. Wheel tire.
- 461,322 (August 11). A. E. Jourfier. Protective appliance for pneumatic or other tires.
- 461,423 (August 14). A. C. Conyent. Mud guard for vehicle wheels.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 0.15 each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

- 269,240, Class 12c (February 27, 1912). Process for introduction into rubber or rubber-like substances of suitable carbo-hydrates. Dr. Kurt Gottlob, Elberfeld.
- 269,444, Class 39a (May 16, 1911). Process and appliances for vulcanizing of rubber objects of unequal thickness. Thomas Gare, New Brighton, Cheshire, England.
- 269,512, Class 39b (February 26, 1913). Process for accelerating vulcanization of natural or artificial rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen.
- 269,533, Class 63e (March 28, 1912). Elastic tire with a covering of enclosed spiral springs crossing each other. Gustav Schaurer, Hanau-on-Main.
- 269,907, Class 47f (March 27, 1913). Closing of rubber and other hose by lip valve. Dr. Paul Louis Planché.
- 270,272, Class 39b (May 3, 1912). Production of a plastic mass for molding. Hollandsche Proteïne Maatschappij, Amsterdam.
- 270,314, Class 39b (February 21, 1911). Process for production of tightly fastening covers. Viscose Development Co., Limited, Pembroke.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 261,687 (December 12, 1913). Manufacture of a substitute for cellulose. A. R. Von Starza Szolayoki, Harburger Strasse 12, Vienna.
- 261,396 (December 12). Process of making rubber substitute. C. Lambert, Berlin-Wilmersdorf.
- 261,688 (December 12). Appliance for drying rubber latex in sheets or slabs. C. Scherf, Chaussée de Tervueren 41, Brussels.
- 261,724 (December 12). Process for accelerating vulcanization of natural or artificial rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen and Elberfeld.
- 261,870 (January 1, 1914). Process for manufacture of product resembling vulcanized rubber. Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld.

THE VOORHEES COMPANY'S INTERESTING CATALOG

The new and attractive booklet issued by the Voorhees Rubber Manufacturing Co. contains a fund of information interesting to its old customers, as well as to those who contemplate taking up the line.

Starting with rubber belting, the reader is shown the 230,000-pound machine which in operation produces this article from the highest grade of cotton duck, the special merits of each brand being commented upon. The text is supplemented by illustrations of the "Ultimate" and other conveyor belts. Next in order come conducting and garden hose, in which this concern specializes, followed by steam hose, air drill and pneumatic tool hose and other hose specialties. Full details are then given of the "2V" (Voorhees Vacuum) hose sold under that trade mark. Underwriters' rubber-lined cotton and linen hose and the various other makes of fire hose are then fully dealt with.

Sheet packing and tubing follow, including the well-known "Nubian" packing, which has set such a high standard of excellence. After illustrating various specialties, the catalog winds up with rubber mats and carpeting, its seventy items fully covering the range of the company's production.

With a view to showing the extent and variety of the Voorhees products, the annexed cut represents one of its large hawse blocks,



HAWSE BLOCK

as used in the Navy for plugging the hawse holes through which the chain cables pass, in order to prevent the sea-wash. These plugs weigh about 350 pounds each, their dimensions being: depth, 19¾ inches; diameter at top, 19¼ inches; diameter at bottom, 17½ inches. The perfect equipment of the Voorhees factory is fully demonstrated in this interesting booklet of 92 pages, which contains many effective illustrations.

SUPERINTENDENCIA DA DEFESA DA BORRACHA RIO DE JANEIRO

The numbers of the Bulletin of the above bureau up to October 31 are to hand. Among the most interesting articles in the past issues are: "The Cultivation of Maniçoba" and "Sources of Rubber," by Dr. O. Labroy; "Permeability of Vulcanized Rubber," "Machines for the Rubber Industry," "The Situation of the Rubber Industry," by Dr. José Bonifaccio; "The World's Rubber Production," Dr. O. Labroy; "Planting of Jequié Maniçoba" and "The Sale of Rubber," by T. C. Deutz, and "Maniçoba in Hawaii." The October number (the last received) has a number of interesting statistical returns, showing the position of Brazilian rubber up to August 31.

Much care has evidently been given to the preparation of the information contained in this bulletin.

A special feature is the reproduction of the general catalog of the recent exhibition at Rio de Janeiro, containing references to the sources of the various samples exhibited, about 2,000 in number. The bulletin thus forms a handbook to the rubber industry of Brazil.

Review of the Crude Rubber Market.

FEBRUARY has practically displayed little alteration in the London price of fine Pará, which stood on January 23 at 3s. 2d. (77.03 cents), and remained during the month following in close proximity to that figure. The highest point reached was 3s. 2½d. (78.04 cents) on February 9, and the lowest 3s. 0¾d. (74.50 cents) on the 19th. At time of writing this review it stands at 3s. 0¾d. (74.50 cents). As the extreme fluctuation was 1¾d. (3½ cents) per pound, the opposing forces were thus pretty evenly balanced. A short interest has been spoken of as imparting strength to the market. Demand has been largely confined to immediate requirements.

Plantation rubber stood on January 23 at 2s. 4¾d. (58.28 cents), and on February 2 at 2s. 5¾d. (60.31 cents). It varied during February between the last-named price and 2s. 7d. (62.84 cents). The highest point reached was 2s. 7d. (62.84 cents) on the 10th, and the lowest, 2s. 5d. (58.79 cents) on the 20th.

The plantation rubber auctions of January 27 and 28 included 971 tons, of which 737 came from the Straits and 234 from Ceylon. Standard crepe sold at 2d. (4 cents) to 2½d. (5 cents) above the prices of the previous fortnightly sales. This upward movement formed the basis of the advances subsequently established by the February continental auctions. It had been anticipated that the quantity offered would reach 1,500 tons, but a leading American manufacturer is said to have purchased the difference of some 500 tons.

At the auction of February 10, the entire quantity offered, 1,102 tons, was sold, with an average improvement of 2d. (4 cents) per pound.

London statistics for January of Eastern plantation rubber show the following results:

	Last year.	This year.
Stock, January 1, 1914.....tons	2,016	3,310
Arrivals, January	2,865	3,860
Total	4,881	7,170
Deliveries, January.....	2,184	3,360
Stock, January 1.....	2,697	3,810

The large increase in deliveries this year denotes activity of trade in plantation rubber.

The continental sales of January and February have been signalized by marked animation. At the Antwerp inscription sale of January 21, out of 422 tons Congo, 345 tons were placed, at an advance of 10 per cent. The whole of the 220 tons plantation offered was sold with an average rise of about 5½ per cent. It is a noteworthy feature that this quantity forms a record for the monthly Antwerp sales. For February 19 a sale had been announced of about 212 tons Congo and 80 tons plantation. On January 21 the stock of rubber in Antwerp was 550 tons, against 282 tons at corresponding period of 1913.

While an improvement had been anticipated, the results of the Amsterdam sale of February 5 surpassed expectations. The entire quantity offered was sold, consisting of 89 tons *Hevea* and about 5 tons *Ficus*. Active demand from America and Europe and the covering of the short interest were understood to have been the causes of the advance of about 10 to 12 per cent. The next sale is announced for March 5.

Stock, February 1, about 166 tons against 121 tons on January 1.

On February 6 the Rotterdam sale of 65 tons displayed marked activity, the whole of the offering, 45 tons Congo and 20 tons

plantation, being sold about 10 per cent. above valuation. The next sale has been fixed for March 6.

The Havre sale of January 21 included about 51 tons, principally Congo, of which 33 tons were sold with an average advance of 10 per cent.

Large American orders for crude rubber have contributed to the marked animation of the Hamburg market. By the latest accounts, opinions were divided as to the future, the idea having gained ground that the level of prices during the last five months of 1913 had been unreasonably low. This view of the situation would justify the expectation of a gradual return to a point between the extreme levels of January and October, 1913.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and February 27, the current date:

PARA.	March 1, '13.	Feb. 1, '14.	Feb. 27, '14.
Islands, fine, new.....	91 @ 92	64 @ 65	70 @ 71
Islands, fine, old.....	.....	.....	.....
Upriver, fine, new.....	96 @ 97	75 @ 76	75 @ 76
Upriver, fine, old.....	.....	77 @ 80	.....
Islands, coarse, new....	46½ @ 47	28 @ 29	32 @
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new....	71 @ 72	44 @ 45	46 @ 47
Upriver, coarse, old....	.....	.....	.....
Cametá	48 @ 49	34 @ 35	36 @
Caucho (Peruvian) ball	71½ @ 72½	46 @ 47	47½ @ 48
Caucho (Peruvian) sheet	.....	.....	.....

PLANTATION CESTONS.

Fine smoked sheet.....	101 @ 102	62 @ 64	62 @ 63
Fine pale crepe.....	97 @ 98	61 @ 62	61 @ 62
Fine sheets and biscuits.	96 @ 97	60 @ 61	61 @

CENTRALS.

Esmeralda, sausage.....	71 @ 72	38 @ 39	44 @ 45
Guayaquil, strip.....	.....	.....	.....
Nicaragua, scrap.....	69 @ 70	36 @ 38	41 @
Panama .....	.....	.....	.....
Mexican plantat'n sheet.	.....	.....	.....
Mexican, scrap.....	.....	35 @ 37	42 @ 43
Mexican, slab .....	.....	.....	.....
Mangabeira, sheet.....	.....	.....	.....
Guacule .....	.....	35 @ 36	.....
Balata, sheet.....	82 @ 83	.....	.....
Balata, block.....	52 @ 53	45 @ 50	.....

AFRICAN.

Lopori, ball, prime.....	.....	53 @ 54	52 @ 53
Lopori, strip, prime....	.....	.....	.....
Arrowini .....	.....	.....	.....
Upper Congo, ball red..	97 @ 98	.....	.....
Ikelemba .....	.....	.....	.....
Sierra Leone, 1st quality	.....	.....	.....
Massa, red	88 @ 89	50 @ 52	49 @ 50
Soudan Niggers .....	.....	48 @ 52	48 @ 50
Cameroon, ball.....	68 @ 69	31 @ 34	31 @ 32
Bonapula	65 @ 66	.....	.....
Madagascar, pinky.....	.....	.....	.....
Accra, flake	25 @ 26	20 @ 21	22 @ 23

INDIAN.

Assam	85 @ 86	.....	.....
Ponnamak	8 @ 8½	.....	.....
B. m. .....	.....	.....	.....

STATISTICS PARA INDIA RUBBER (IN TONS) (INCLUDING CAUCHO).

STATISTICS FOR THE MONTH OF JANUARY.

	1913.	1912.	1911.
Receipts at Para.....	5,130	4,860	4,130
Shipments to Liverpool... 1,120	280	2,060	1,730
Shipments to Continental Ports.....	290	20	310
Shipments to America... 1,810	2,040	2,090	1,370
American Imports.....	1,580	2,090	2,410
American Deliveries..... 1,280	200	1,480	2,470
Liverpool Deliveries.....	1,110	305	1,415
Continental Imports.....	160	190	300
Continental Deliveries..... 160	150	310	440

VISIBLE SUPPLY—1ST FEBRUARY, 1914.

	1914.	1913.	1912.	1911.
Stock in England, Pará, 1st hands.....	410	200	180	2,230
Pará, 2nd hands.....	110	740	510	225
Stock in Pará, 1st hands.....	530	90	270	630
Syndicate.....	810	810	2,240	1,120
Stock in America.....	230	60	410	250
Stock on Continent.....	50	20	80	70
At Port of Europe.....	1,790	1,630	1,790	1,630
At Port of America.....	1,350	450	1,350	450
Total Visible Supply, including Cauchó.....	5,455	6,340	7,900	7,105

CROP STATISTICS—30TH JUNE, 1913. 31ST JANUARY, 1914.

	1913/14.	1912/13.	1911/12.	1910/11.
Para Receipts.....	17,540	3,780	10,270	12,770
Para Shipments to Europe.....	8,310	1,930	9,870	12,390
Para Shipments to America.....	8,500	1,370	9,870	10,830
England Landings, net.....	6,955	8,755	7,372	8,340
England Deliveries, net.....	8,085	9,535	10,712	7,375
America Landings, net.....	9,460	11,420	12,505	7,854
America Deliveries, net.....	9,350	11,180	12,155	8,210
Continental Imports, net.....	2,040	2,600	1,730	8,130
Continental Deliveries, net.....	2,240	2,680	1,760	1,800

POSITION—1ST FEBRUARY, 1914.

Decrease in Receipts during January, 1914, against January, 1913...	700
Decrease in Receipts—Crop, July/January, 1913/14, against 1912/13...	*3,280
Decrease in Deliveries—Crop, July/January, 1913/14, England and Continent, against 1912/13.....	1,890
Decrease in Deliveries—Crop, July/January, 1913/14, America, against 1912/13.....	1,830
Decrease in Visible Supply Pará Grades, against 1st February last year.....	885
Increase in Stock, England, January 31st, 1914, against January 31st, 1913.....	85

W. M. WRIGHT & CO., LTD.

London, 2nd February, 1914. 21, Mincing Lane, London, E.C.
During the month 220 tons, including 135 tons Cauchó, have been shipped from Europe to America.

*A decrease of 2,870 tons Rubber, and 410 tons Cauchó.

Amsterdam.

JOSSEN & JANSSEN report [February 5].

The general animation of demand allowed the importers to sell the 92 tons offered today, chiefly plantation, at an advance of 10 to 12 per cent.

Rotterdam.

HAAFLAAR & DE VRIES report [February 6].

On February 6 the sale prices realized were about 10 per cent. above valuations for Congo, while plantation displayed an advance of about 9 per cent.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS—Prices paid by consumers for carload lots, per pound:

Feb. 27, '14.

Old rubber boots and shoes—domestic.....	7 1/2 @ 8
Old rubber boots and shoes—foreign.....	7 1/2 @ 7 3/4
Pneumatic bicycle tires.....	4 1/2 @ 4 3/4
Automobile tires.....	5 1/2 @ 5 3/4
Solid rubber wagon and carriage tires.....	5 1/2 @ 5 3/4
White trimmed rubber.....	10 @ 10
Heavy black rubber.....	3 3/4 @ 4
Air brake hose.....	3 1/2 @ 4
Garden hose.....	1 @ 1
Fire and large hose.....	2 @ 2 1/2
Matting.....	5 @ 5
No. 1 white auto tires.....	5 1/2 @ 5 1/2
Foreign auto tires.....	5 1/2 @ 5 1/2

Plantation Rubber from the Far East.

[From January 1 to January 26, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.]

	1913.	1912.	1911.
To Great Britain.....pounds	731,051	565,396	104
To United States.....	165,779	174,358	
To Belgium.....	116,241	159,639	
To Australia.....			
To Italy.....			
To Germany.....	4,621	53,843	
To France.....	4,600	32,752	
To Straits Settlements.....		35,815	
To India.....		5,196	

(Same period 1912, 439,250 pounds; same period 1911, 332,615.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 180,201 pounds—110,002 pounds from the Straits and 70,199 pounds from India.) To arrive at the approximate quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.

These figures include the production of the Federated Malay States, but not of Ceylon.]

	Penang, Nov. 30.	Port Swettenham, Dec. 31.	TOTAL.
Great Britain pounds	20,980,086	13,838,133	24,331,405
Continent.....	373,194	157,333	3,129,639
Ceylon.....	1,063,147		1,063,147
United States.....	5,755,897	316,267	1,416,730
Australia.....	109,851	247,867	6,003,764
Total.....	28,429,760	14,559,600	28,877,774
Same period, 1912.....	14,649,707	8,655,764	20,254,269
Same period, 1911.....	6,589,425	4,547,062	12,109,788
Same period, 1910.....	3,764,877	2,234,569	8,349,523
			14,348,969

New York.

In regard to the financial situation, Albert B. Boers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During February there has been a good demand for paper, both by city and out-of-town banks, and rates have ruled easy at 4 1/2 @ 4 3/4 per cent. for the best rubber names, and 5 @ 5 1/2 per cent. for those not so well known."

NEW YORK PRICES (LONDON AND NEW YORK).

	1914.	1913.	1912.
Latex.....			\$1.03 @ 1.11
Sheet.....			.90 @ .94
Block.....			.97 @ 1.07
Crude.....			.62 @ .64

IMPORTS FROM PARA AT NEW YORK.

JANUARY 28.—By the steamer *Christopher* from Pará and Manáos.

	Fine.	Medium.	Coarse.	Cauchó.	Total.
Arnold & Zeiss.....	338,700	64,100	144,900	77,500	625,200
General Rubber Co.....	132,500	31,900	19,000	26,000	209,400
Meyer & Brown.....	72,700	25,400	101,900	27,400	227,400
Henderson & Korn.....	50,700	7,100	58,000	6,200	122,000
H. A. Astlett & Co.....	16,700	7,100	19,100	8,400	51,300
Johnstone, Whitworth & Co.....	27,100	6,800			33,900
G. Amsinck & Co.....	3,200	400	4,000	600	8,200
American Express Co.....	65,000				65,000
Robinson & Co.....	48,700	27,400	9,000	1,200	86,300

FEBRUARY 16.—By the steamer *Benedict* from Pará and Manáos.

	Fine.	Medium.	Coarse.	Cauchó.	Total.
Arnold & Zeiss.....	338,100	68,700	270,000	59,800	736,600
General Rubber Co.....	134,300	15,400	24,100	42,800	216,600
Meyer & Brown.....	102,300	23,800	102,700	9,000	237,800
G. Amsinck & Co.....	79,400		2,700	14,200	96,300
Henderson & Korn.....	33,900	19,900	63,600	40,800	158,200
Johnstone, Whitworth & Co.....	39,800	1,100		2,800	43,700
W. R. Grace & Co.....		5,500	11,200	20,700	37,400
Hagemeyer & Brunn.....			18,500		18,500
H. A. Astlett & Co.....	21,000	10,300	81,000	16,600	128,900
Robinson & Co.....	131,100	45,700	31,100	3,400	211,300
American Express Co.....	22,200				22,200

PARA RUBBER VIA EUROPE.

Raw Products Co. (Coarse).....	50,000	
W. R. Grace & Co. (Fine).....	2,200	57,200
FEBRUARY 2.—By the <i>Cymric</i> =Liverpool:		
Ed. Maurer.....	4,500	
FEBRUARY 7.—By the <i>Albatross</i> =Liverpool:		
Raw Products Co. (Coarse).....	11,200	
Arnold & Zeiss (Fine).....	11,200	22,400
FEBRUARY 14.—By the <i>Albatross</i> =Hamburg:		
Henderson & Korn.....	18,000	
Arnold & Zeiss (Fine).....	12,500	
Rubber & Guayule Agency, Inc. (Fine).....	22,500	
Various (Fine).....	15,000	79,200
FEBRUARY 17.—By the <i>Amerika</i> =Hamburg:		
Raw Products Co. (Coarse).....	11,200	
FEBRUARY 17.—By the <i>Byron</i> =Bahia:		
Ed. Maurer.....	11,000	
FEBRUARY 18.—By the <i>Lafayette</i> =Antwerp:		
Ed. Maurer.....	2,500	

OTHER NEW YORK ARRIVALS.

CENTRAIS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

January 24.—By the <i>Colon</i> =Colon:		
W. R. Grace & Co.....	2,500	
G. Amsinck & Co.....	300	
Broedermann & Litzrodt.....	300	3,100
January 24.—By the <i>Metapan</i> =Cartagena:		
Ed. Maurer.....	1,200	
January 24.—By the <i>Metapan</i> =Cartagena:		
Ed. Maurer.....	3,500	
January 30.—By the <i>Metapan</i> =Cartagena:		
Ed. Maurer.....	11,200	
January 31.—By the <i>Esperanza</i> =Mexico:		
Lawrence Johnson & Co.....	2,500	
General Export & Commission Co.....	600	
G. Amsinck & Co.....	500	
February 2.—By <i>El Mundo</i> =Galveston:		
Ed. Maurer.....	4,500	
February 2.—By the <i>Vestris</i> =Bahia:		
Adolph Hirsch & Co.....	45,000	
February 2.—By the <i>Dakota</i> =Coatzacoalcas:		
Henderson & Korn.....	1,000	
February 3.—By the <i>Emil L. Boas</i> =Colon:		
Andean Trading Co.....	8,000	
February 3.—By the <i>Emil L. Boas</i> =Colon:		
Andean Trading Co.....	45,000	

FEBRUARY 5.—By the <i>Panama</i> =Colon:		
G. Amsinck & Co.....	4,500	
American Trading Co.....	2,200	
Piza Nephews & Co.....	2,200	8,900
FEBRUARY 7.—By the <i>Metapan</i> =Mexico:		
E. Steiger & Co.....	7,500	
Various.....	1,500	9,000
FEBRUARY 11.—By the <i>Metapan</i> =Galveston:		
Various.....	425,000	
FEBRUARY 11.—By the <i>Prinz Joachim</i> =Colon:		
Andean Trading Co.....	3,000	
J. S. Sembrada & Co.....	5,000	8,000
FEBRUARY 11.—By the <i>Metapan</i> =Colon:		
G. Amsinck & Co.....	14,000	
Ed. Maurer.....	3,000	
Wessels, Kulenkampff & Co.....	1,000	
Pottberg, Ebeling & Co.....	1,000	
I. L. Morrison.....	500	
Isaac Brandon & Bros.....	200	19,700
FEBRUARY 14.—By the <i>Metapan</i> =Mexico:		
E. Steiger & Co.....	7,000	
General Export & Commission Co.....	1,000	
Hamburger & Stack.....	300	8,300
FEBRUARY 17.—By the <i>Colon</i> =Colon:		
Isaac Brandon & Bros.....	1,300	
Isaac Brandon & Bros.....	300	1,500
FEBRUARY 17.—By the <i>Byron</i> =Bahia:		
Russbach Bros. & Co.....	40,000	
AFRICANS.		
January 24.—By the <i>Oceanic</i> =Lisbon:		
Various.....	33,500	
January 24.—By the <i>Graf Waldersee</i> =Hamburg:		
Arnold & Zeiss.....	2,000	
Ed. Maurer.....	7,000	
Various.....	10,000	19,000
January 26.—By the <i>Campana</i> =Liverpool:		
Various.....	11,000	
January 26.—By the <i>Campana</i> =Liverpool:		
Robinson & Co.....	7,000	
January 27.—By the <i>Rockhampton</i> =Havre:		
Arnold & Zeiss.....	16,000	
February 2.—By the <i>Cymric</i> =Liverpool:		
Johnstone, Whitworth & Co.....	4,500	
February 2.—By the <i>Philadelphia</i> =Southampton:		
Meyer & Brown.....	22,000	
February 2.—By the <i>Campana</i> =Liverpool:		
Arnold & Zeiss.....	11,200	
General Rubber Co.....	40,000	
Henderson & Korn.....	11,200	
Robert Badenhop.....	4,500	
Various.....	7,500	74,400
February 2.—By the <i>Campana</i> =Bahia:		
Ed. Maurer.....	11,200	
February 2.—By the <i>Pretoria</i> =Hamburg:		
Ed. Maurer.....	15,000	
Johnstone, Whitworth & Co.....	11,200	
Rubber & Guayule Agency, Inc.....	42,000	68,200
February 3.—By the <i>Campana</i> =Hamburg:		
Meyer & Brown.....	7,000	
Henderson & Korn.....	36,500	
Rubber & Guayule Agency, Inc.....	4,500	
Various.....	7,500	55,500
February 4.—By the <i>Finland</i> =Antwerp:		
Meyer & Brown.....	17,000	
Robinson & Co.....	33,500	
Rubber Trading Co.....	4,000	
Various.....	16,000	70,500
February 6.—By the <i>St. Paul</i> =Southampton:		
Arnold & Zeiss.....	22,500	
Various.....	35,000	57,500

FEBRUARY 9.—By the <i>Kaiserin Auguste Victoria</i> =Hamburg:		
Rubber & Guayule Agency, Inc.....	18,500	
Ed. Maurer.....	5,000	23,500
FEBRUARY 9.—By the <i>Megantic</i> =Liverpool:		
Henderson & Korn.....	15,000	
Robinson & Co.....	15,000	30,000
FEBRUARY 10.—By the <i>Metapan</i> =London:		
Meyer & Brown.....	25,000	
FEBRUARY 14.—By the <i>Campana</i> =Havre:		
Arnold & Zeiss.....	25,000	
Raw Products Co.....	11,200	36,200
FEBRUARY 16.—By the <i>Samland</i> =Antwerp:		
Meyer & Brown.....	17,000	
Rubber Trading Co.....	15,000	32,000
FEBRUARY 16.—By the <i>Pennsylvania</i> =Hamburg:		
Various.....	30,000	
FEBRUARY 17.—By the <i>Louisiana</i> =Havre:		
Arnold & Zeiss.....	190,000	
FEBRUARY 17.—By the <i>St. Louis</i> =Southampton:		
Arnold & Zeiss.....	11,200	
Various.....	13,500	24,700
FEBRUARY 17.—By the <i>Metapan</i> =Hamburg:		
Ed. Maurer.....	15,000	
Rubber & Guayule Agency, Inc.....	7,000	22,000
FEBRUARY 18.—By the <i>Lafayette</i> =Antwerp:		
Meyer & Brown.....	22,500	
EAST INDIAN.		
[*Denotes Plantation Rubber.]		
January 24.—By the <i>Graf Waldersee</i> =Hamburg:		
Arnold & Zeiss.....	*11,200	
Various.....	*9,000	*20,200
January 24.—By the <i>Majestic</i> =Southampton:		
Arnold & Zeiss.....	*85,000	
W. R. Grace & Co.....	*5,600	
W. Stiles & Co.....	*3,500	
Rubber Trading Co.....	*2,000	*96,100
January 26.—By the <i>Campana</i> =Liverpool:		
General Rubber Co.....	*22,500	
January 28.—By the <i>Kaiserin</i> =Antwerp:		
Meyer & Brown.....	*360,000	
Arnold & Zeiss.....	*22,500	
Various.....	*8,000	*390,500
January 28.—By the <i>Rotterdam</i> =Amsterdam:		
Meyer & Brown.....	*15,500	
Arnold & Zeiss.....	*18,500	
Rubber Trading Co.....	*8,500	
Various.....	*12,000	*54,500
January 28.—By the <i>Minnetonka</i> =London:		
Meyer & Brown.....	*155,000	
Adolph Hirsch & Co.....	*45,000	
Johnstone, Whitworth & Co.....	*40,000	
Charles T. Wilson.....	*40,000	
General Rubber Co.....	*67,000	
Arnold & Zeiss.....	*90,000	
Henderson & Korn.....	*63,500	
Rubber & Guayule Agency, Inc.....	*20,000	
Ed. Maurer.....	*17,000	
L. Littlejohn & Co.....	*8,500	
Robinson & Co.....	*6,000	
Rubber Trading Co.....	*5,000	
Ed. Boustead & Co.....	*6,700	
Raw Products Co.....	*2,200	
Various.....	*180,700	*746,600
January 29.—By the <i>Olympic</i> =Southampton:		
Meyer & Brown.....	*28,000	
Ed. Maurer.....	*30,000	
L. Blitz.....	*3,000	
Henderson & Korn.....	*4,000	
Robinson & Co.....	*60,000	
Arnold & Zeiss.....	*78,000	
Rubber Trading Co.....	*11,200	
Various.....	*180,000	*344,200
January 31.—By the <i>Campana</i> =Hamburg:		
Meyer & Brown.....	*90,000	
General Rubber Co.....	*9,500	
Ed. Maurer.....	*33,500	
W. R. Grace & Co.....	*50,000	
Various.....	*3,500	*186,500
February 2.—By the <i>Philadelphia</i> =Southampton:		
Meyer & Brown.....	*100,000	
Robinson & Co.....	*22,500	
Johnstone, Whitworth & Co.....	*45,000	
Arnold & Zeiss.....	*67,000	
Henderson & Korn.....	*12,500	
Henderson & Korn.....	*60,000	
Rubber Trading Co.....	*4,000	
Various.....	*100,000	*411,000

FEBRUARY 2.—By the <i>Batavia</i> —Colombo:	
Meyer & Brown.....	*18,500
H. W. Peabody & Co.....	*8,500
Various.....	*14,000 *36,000

FEBRUARY 2.—By the <i>St. Paul</i> —Southampton:	
Arnold & Zeiss.....	*33,500
Henderson & Korn.....	*13,500
Ed. Maurer.....	*8,500
Ed. Maurer.....	*6,000
Various.....	*20,000 *156,500

FEBRUARY 2.—By the <i>Pretoria</i> —Hamburg:	
Ed. Maurer.....	*11,200
Rubber & Guayule Agency, Inc.....	*8,500
Various.....	*20,000 *39,700

FEBRUARY 3.—By the <i>Mesaba</i> —London:	
General Rubber Co.....	*235,000
Johnstone, Whitworth & Co.....	*156,000
Henderson & Korn.....	*135,000
Charles T. Wilson.....	*85,000
Meyer & Brown.....	*19,000
Various.....	*57,000 *657,000

FEBRUARY 3.—By the <i>Prinzess Alice</i> —Hamburg:	
Meyer & Brown.....	*25,000
Rubber & Guayule Agency, Inc.....	*3,000
Various.....	*25,000 *30,200

FEBRUARY 4.—By the <i>Fontaine</i> —Antwerp:	
Meyer & Brown.....	*280,000
Arnold & Zeiss.....	*30,000
Rubber Trading Co.....	*11,200
Various.....	*5,600 *326,800

FEBRUARY 5.—By the <i>Hamburg</i> —Hamburg:	
Meyer & Brown.....	*30,000
Rubber & Guayule Agency, Inc.....	*7,000
Various.....	*30,000 *37,000

FEBRUARY 5.—By the <i>Potsdam</i> —Hamburg:	
Meyer & Brown.....	*14,500
Rubber Trading Co.....	*18,000
Robert Badenhop.....	*5,000
Various.....	*16,000 *53,500

FEBRUARY 6.—By the <i>St. Paul</i> —Southampton:	
Meyer & Brown.....	*55,500
Ed. Maurer.....	*14,000
Goodyear Tire & Rubber Co.....	*22,500
Arnold & Zeiss.....	*8,500
Henderson & Korn.....	*75,000 *175,500

FEBRUARY 6.—By the <i>St. Paul</i> —Colombo:	
Meyer & Brown.....	*60,000
W. R. Grace & Co.....	*30,000
Ed. Maurer.....	*7,500
Henderson & Korn.....	*3,000
Various.....	*5,000 *200,500

FEBRUARY 7.—By the <i>St. Paul</i> —Hamburg:	
Ed. Maurer.....	*12,000
Various.....	*12,000

FEBRUARY 10.—By the <i>St. Paul</i> —Hamburg:	
General Rubber Co.....	*67,000
Johnstone, Whitworth & Co.....	*40,000
Charles T. Wilson.....	*30,000
Ed. Boustead & Co.....	*8,000
Henderson & Korn.....	*20,000
Ed. Maurer.....	*13,500
Arnold & Zeiss.....	*35,000
Rubber Trading Co.....	*13,500
Goodyear Tire & Rubber Co.....	*20,000
Various.....	*30,000 *409,500

FEBRUARY 13.—By the <i>City of Naples</i> —Colombo:	
Meyer & Brown.....	*60,000
W. R. Grace & Co.....	*30,000
H. W. Peabody & Co.....	*7,500
Henderson & Korn.....	*30,000
Various.....	*3,000 *137,500

FEBRUARY 14.—By the <i>St. Paul</i> —Southampton:	
Meyer & Brown.....	*75,000
Ed. Maurer.....	*17,500
Charles T. Wilson.....	*10,500
Arnold & Zeiss.....	*15,000
Henderson & Korn.....	*85,000 *323,000

FEBRUARY 14.—By the <i>St. Paul</i> —Hamburg:	
Michelin Tire Co.....	*30,000
Johnstone, Whitworth & Co.....	*11,200 *41,200

FEBRUARY 16.—By the <i>St. Paul</i> —Antwerp:	
Meyer & Brown.....	*50,000
Arnold & Zeiss.....	*100,000
Rubber Trading Co.....	*11,500 *161,500

FEBRUARY 16.—By the <i>Pennsylvania</i> —Hamburg:	
Meyer & Brown.....	*6,000
W. R. Grace & Co.....	*8,000
Henderson & Korn.....	*11,200
Various.....	*4,500 *29,700

FEBRUARY 16.—By the <i>Dalmore</i> —Colombo:	
Meyer & Brown.....	*60,000
Ed. Maurer.....	*10,500
General Rubber Co.....	*4,000
W. R. Grace & Co.....	*25,000 *101,500

FEBRUARY 16.—By the <i>St. Paul</i> —Amsterdam:	
Robert Badenhop.....	*6,000

FEBRUARY 16.—By the <i>St. Paul</i> —Singapore:	
Meyer & Brown.....	*6,000
Henderson & Korn.....	*57,000
Ed. Maurer.....	*11,000
Johnstone, Whitworth & Co.....	*2,200
Various.....	*182,600 *259,000

FEBRUARY 16.—By the <i>St. Paul</i> —Havre:	
Ed. Maurer.....	*43,000

FEBRUARY 17.—By the <i>St. Louis</i> —Southampton:	
Meyer & Brown.....	*90,000
Ed. Maurer.....	*24,500
W. R. Grace & Co.....	*11,200
Charles T. Wilson.....	*33,500
Henderson & Korn.....	*33,500
Rubber Trading Co.....	*22,500
Arnold & Zeiss.....	*90,000 *305,200

FEBRUARY 17.—By the <i>St. Louis</i> —Hamburg:	
Ed. Maurer.....	*7,000
Rubber & Guayule Agency, Inc.....	*11,200
Various.....	*4,500 *22,700

FEBRUARY 18.—By the <i>Lapland</i> —Antwerp:	
Meyer & Brown.....	*160,000
Arnold & Zeiss.....	*67,000 *227,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JANUARY, 1914.

Imports:	Pounds.	Value.
India-rubber.....	7,992,299	\$4,458,387
Balata.....	95,094	50,155
Gutta-percha.....	121,463	16,185
Gutta-jelutong (Pontianak).....	622,760	32,965
Total.....	8,831,616	\$4,557,692
India-rubber.....	17,279	\$8,187
Reclaimed rubber.....	132,352	23,066
Rubber scrap, imported.....	1,109,304	\$98,159
Rubber scrap, exported.....	414,636	31,189

BOSTON ARRIVALS.

JANUARY, 1914.

	Pounds.	Value.
Gutta-jelutong.....	264,047	\$8,514
Gutta-percha.....	79,004	8,894
India rubber.....	73,180	44,746

EXPORTS OF INDIA-RUBBER FROM PARA, AND MANAOS IN 1913 AND FOR SIXTEEN YEARS.

[The figures indicate weights in kilograms.]

EXPORTERS.	NEW YORK.					EUROPE.					TOTAL.
	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	
Zarges, Berringer & Co.—Pará.....	2,691,855	464,299	2,017,414	989,504	6,163,072	4,857,656	732,171	892,945	2,367,882	8,850,654	15,013,726
Zarges, Ohliger & Co.—Manaos.....	1,799,473	332,939	963,306	822,729	3,848,447	1,290,533	373,895	204,245	964,563	2,833,236	6,681,683
General Rubber Co. of Brazil—Pará.....	1,109,762	267,385	1,492,325	531,440	3,400,912	954,991	53,698	103,605	135,262	1,247,556	4,648,468
R. O. Ahlers & Co., Ahlers & Co.—Pará and Manaos.....	77,012	166,358	472,654	1,219,316	850,968	91,682	218,131	458,954	1,619,735	2,839,051	
Seligmann & Co., G. Deffner & Co.—Pará and Manaos.....	37,042	5,465	20,749	63,256	42,023	31,788	4,233	30,859	77,115	140,371	
Suarez Hermanos & Co., Ltd.—Pará.....	56,283	9,324	5,160	70,767	1,094,677		160,977	641,417	1,928,859	1,999,626	
De Lagotellerie & Co.—Pará and Manaos.....	162,234	7,580	50,840	4,200	224,854	655,626	141,380	160,138	114,925	1,072,069	1,296,923
Adelbert H. Alden, Ltd.—Pará and Manaos.....	459,409	124,178	189,136	100,502	873,225	172,802	21,796	41,342	56,892	292,832	1,166,057
Pires Teixeira & Co.—Pará.....	126,630	33,660	279,350	20,440	460,080	322,660	2,040	25,740	3,630	354,070	814,150
Green & Co., W. Peters & Co.—Pará and Manaos.....	101,290	25,474	48,609	122,367	297,740	51,676	39,382	34,298	41,912	167,268	465,008
J. G. Araujo—Manaos.....	15,230	5,547	15,245	1,262	37,284	79,725	17,697	72,511	17,004	186,937	224,221
Amazons Andresen—Manaos.....	18,128	12,899	64,202	32,853	233,082	471,135	41,290	131,595	475,025	1,119,045	1,352,127
Sundries.....	7,115,628	1,350,973	5,301,574	3,123,860	16,892,035	10,868,632	1,552,419	2,058,360	5,308,765	19,788,176	36,680,211
Itacoatiara, direct.....	2,400	150	2,160	1,800	6,510	87,751	14,210	52,182	25,473	179,616	186,126
Iquitos, direct.....	105,335	3,671	21,147	72,417	202,570	772,625	24,612	345,620	1,003,969	2,146,826	2,349,396
Manaos, on board S. S. "Rio Negro".....	79,201	17,120	18,898	18,902	134,121	54,721	3,149	11,546	1,605	71,021	71,021
Manaos, on board S. S. "Basil".....											134,121
Total, 1913.....	7,302,564	1,371,914	5,343,779	3,216,979	17,235,236	11,783,729	1,594,390	2,467,708	6,339,812	22,185,639	39,420,875
Total, 1912.....	9,477,888	2,035,278	6,503,631	3,337,691	13,354,488	12,570,242	1,414,572	2,822,694	5,200,397	22,007,905	43,362,393
Total, 1911.....	7,686,680	1,571,375	5,173,230	1,669,596	16,100,881	11,230,371	1,503,869	2,504,439	4,519,039	19,757,718	35,858,599
Total, 1910.....	7,500,410	1,412,311	4,489,108	1,658,661	15,060,490	11,673,302	1,506,752	3,382,432	6,416,842	22,979,328	38,039,818
Total, 1909.....	9,439,722	1,767,310	5,784,170	2,655,728	19,646,980	9,832,613	1,372,221	2,950,626	5,649,763	19,805,223	39,452,203
Total, 1908.....	8,280,768	1,739,505	5,616,549	1,902,620	17,539,444	10,721,266	1,419,025	2,854,624	5,328,994	20,523,909	38,063,351
Total, 1907.....	8,012,592	1,863,775	5,149,312	1,580,657	16,606,336	10,783,787	1,358,264	3,190,982	5,574,783	20,907,816	37,514,152
Total, 1906.....	7,406,171	1,785,315	5,496,419	1,531,399	16,192,304	9,289,310	1,253,574	3,223,944	4,799,623	18,575,451	34,767,755
Total, 1905.....	7,173,463	1,518,444	4,921,222	1,647,216	15,260,345	10,052,634	1,291,703	2,498,516	4,363,690	18,656,543	33,916,888
Total, 1904.....	8,062,104	1,630,355	5,394,429	1,222,580	16,309,468	7,615,817	993,955	2,503,520	3,221,376	14,334,668	30,644,136
Total, 1903.....	7,248,065	1,621,827	5,029,646	1,133,857	15,033,395	9,156,872	1,167,956	2,659,748	3,076,971	16,061,547	31,094,942
Total, 1902.....	6,588,524	1,614,776	4,523,413	1,133,155	13,859,868	8,522,521	1,514,521	2,595,177	2,057,222	14,689,912	28,549,780
Total, 1901.....	8,027,727	1,926,055	4,271,456	1,325,290	15,550,978	7,939,010	1,556,358	2,605,553	2,638,599	14,739,520	30,290,498
Total, 1900.....	6,887,377	1,199,611	3,783,679	894,500	12,434,667	7,798,537	1,401,390	3,256,969	1,857,100	14,313,996	26,748,663
Total, 1899.....	7,583,405	1,319,349	4,023,710	951,854	13,878,318	6,410,647	1,030,459	2,527,013	1,583,572	11,551,691	25,430,009
Total, 1898.....	5,399,654	868,982	2,759,714	801,915	9,015,265	6,794,541	1,125,688	2,995,801	1,162,712	12,078,742	21,909,007



Vol. 49.

March 1, 1914.

No. 6.

TABLE OF CONTENTS.

Editorials:	
Will Ironclads Become Rubberclads?	281
The Cash Value of One Good Snow Storm	281
A Great Loss to Brazil	282
A Wise Man's View of the Labor Union	282
Co-operative Advertising	283
Perennial Making of Auto Laws	283
Minor Editorial	283
Lecture on Rubber. By Dr. E. Marckwald	284
The Uses of Rubber in Mining	285
A Sensible Size for Garden or Lawn Hose	285
Cotton—Its Varieties, Geography, Market and Uses	289
Some Cotton Statistics	291
India-Rubber Goods in Commerce	292
Difficulties and Dangers of Balata Gathering—Canoeing Up the Maroni River in Dutch Guiana	293
The African Rubber Industry	296
The Editor's Book Table	298
The Rubber Trade in Boston	300
The Rubber Trade in Akron	301
The Rubber Trade in Chicago	302
The Rubber Trade in Rhode Island	303
The Rubber Trade in Trenton	304
Rubber Notes from California	304
Homes for Factory Workers	305
New Trade Publications	306
Calendars and Souvenirs	306
New Rubber Goods in the Market	307
Obituary Record	308
News of the American Rubber Trade	310
A Few of the Latest Tires	316
New Machines and Appliances	317
The India Rubber Trade in Great Britain	319
Some English Rubber Statistics of the World	320
The Fourth International Rubber and Allied Industries Congress	321
International Conference of Tropical Agriculture, London, 1914	322
Continental Rubber Statistics	322
Silver Jubilee of Kommerzienrat Louis Hoff	323
Rubber Notes from British Guiana	324
Notes from Dutch Guiana	324
The Rubber Crisis in Bolivia	325
Mr. da Costa Invents a New Coagulating Machine	326
Rubber Exports from Netherlands India	327
The International Rubber Congress and Exhibition at Batavia	327
Some Rubber Planting Notes	328
Recent Patents Relating to Rubber	329
Review of Crude Rubber Market	332

Antwerp

RUBBER STATISTICS FOR JANUARY

DETAILS.	1914.	1913.	1912.	1911.	1910.
Stocks, Dec. 1.....kilos	559,281	511,060	674,738	588,212	541,512
Arrivals in January					
Congo sorts	286,573	321,607	226,248	403,421	202,547
Other sorts	25,599	12,645	6,195	82,214	5,656
Plantation sorts	209,482	138,305	88,990	64,321	53,664
Aggregating	1,080,935	983,617	996,171	1,138,168	803,379
Sales in January	659,977	519,865	410,115	492,749	321,217
Stocks, January 31.	40,958	463,757	886,056	645,419	482,162
Arrivals since Jan. 1					
Congo sorts	286,573	321,607	226,248	403,421	202,547
Other sorts	25,599	12,645	6,195	82,214	5,656
Plantation sorts	209,482	138,305	88,990	64,321	53,664
Aggregating	511,654	474,557	341,433	549,956	261,867
Sales since January 1..	659,977	519,865	410,115	492,749	321,217

RUBBER ARRIVALS FROM THE CONGO.

January 22. By the steamer <i>Albertville</i>	
Messrs. Bange & Co. (Kasani) Felix	61,000
do (Intertropical)	7,600
do (Comp. Commercial Congolaise)	6,400
do (Grands Lacs)	2,600
do (Comptoir)	15,000
do (Cie du Congo Belge)	1,000
do (Forminco)	2,100
do (Forminco)	7,300
Société Coloniale Anversoise (Communière)	2,260
Credit Colonial & Commercial (Mre. L. & W. Van de Velde) (S. A.)	5,200
do (Creveldt)	1,100
Comp. Coloniale franco-belge (Charles Dethier)	7,500
do (American Congo Co)	1,400
Willart Frères	6,000
	126,460

SINGAPORE SHARE CIRCULAR.

The share circular of Messrs. Fraser & Co., Singapore (issued weekly), has come to hand, and contains quotations for the shares of about 75 leading Malayan rubber companies. References to the paid up capitals and latest dividends supplement the other information of value to prospective investors. A detailed table of monthly outputs shows at a glance the relative importance of the respective companies.

A DANISH RUBBER RECLAIMER ON THE SITUATION.

In a neat booklet, Mr. Albert Theilgaard, director of the reclaiming works at Kjoerge, Denmark, has summarized the principal features of the reclaiming industry. When he took up the work, some ten years ago, only a few brands of reclaimed rubber were known, and manufacturers had their own reclaiming plants, which they regarded quite as necessary as their vulcanizers. Even now, however, reclaiming, according to the author's opinion, is imperfectly understood by manufacturers, and they have so many difficulties to contend with in their regular line of work that they are better off by leaving reclaiming to special factories.

Another difficulty consists in the fact that waste is steadily deteriorating.

It is in the interest of the manufacturer for the scrap to reach the lowest possible level, but this, Mr. Theilgaard thinks, is impossible as long as hundreds of makers do their own reclaiming. The hope is expressed that they will see this plan is unsuitable for small plants.

Manufacturers have in some cases an objection to purchasing reclaimed rubber, on the ground that they would have the trouble of testing it. This trouble could, however, be avoided by the employment of a chemist or a laboratory. They forget that it is much easier to thoroughly test reclaimed rubber than to reclaim it for themselves.

Attention is called to the fact that scrap rubber has not fallen in proportion to the crude article. This question was handled by THE INDIA RUBBER WORLD in its December issue, page 109, with illustrative quotations; the article being quoted in Mr. Theilgaard's booklet.

Mr. Theilgaard adds that the prices of waste must be so fixed that reclaimed rubber, will cost notably less than a compound of medium rubber of the same composition, otherwise, the manufacturer would prefer to take crude rubber, for which course no one could blame him.



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TABLE OF CONTENTS ON LAST PAGE OF READING.**THE AWAKENING ON THE AMAZON.**

THE rubber industry of the Amazon is not by any means wiped out. Nor is it likely to be as long as there are rubber trees by the millions only waiting to be tapped. The trustees of this great industry have been profligate and extravagant in the discharge of their obligations, with the result that their stewardship is at an end, and the real owners—the people of Northern Brazil—are at length fully aroused to the seriousness of the situation and are standing shoulder to shoulder in determined effort to save their heritage.

That they have lived extravagantly in the past is no reason to believe them unable to live economically in the future. In fact the practice of rigid economies has already begun. Under the old and now discarded system it cost 60 cents' worth of food to produce one pound of islands rubber. Upriver sorts cost from 75 cents to \$1 a pound. Who knows how cheaply a pound of Pará rubber can be produced under the new order of things? It is a struggle for existence by a people who are determined to live and to preserve their rubber industry. The province of Acre is already spreading the gospel of economy, and Amazonia and Pará are falling into line. The state and federal governments will be forced to reduce the burdensome

taxes, and then it will be seen, and no doubt with surprise, how cheaply Amazonian rubber can be produced.

THE RESPONSIVENESS OF THE DUMP HEAP.

THE philosophical Duke in "As You Like It" has been much commended for his ability under trying circumstances to find "books in the running brooks, sermons in stones and good in every thing"; but, to employ a modernism, he had nothing on the waste material dealer of today, who finds vast riches in tin cans, millions in worn-out and cast off goloshes and wealth in every dump heap.

An interesting event occurred about the middle of March, when the National Association of Waste Material Dealers met in New York for their first annual dinner. There were several excellent addresses emphasizing the great development of the industry with which they were associated, while the chief speaker of the evening—Mr. Curtis Guild, of Boston, ex-Governor and ex-Ambassador—paid the assembled dealers the compliment of appearing before them with a carefully prepared and scholarly dissertation giving a comprehensive and historic survey of the whole conservation industry. The occasion and the character of the speeches, the statistics quoted and facts recited, proved what an important position the gathering of waste materials had attained among recognized industries—in other words, showed the colossal size and amazing richness of the national rubbish heap. The whole subject is one of profound interest to the student of economics, but the reclaiming of rubber waste naturally calls for the greater attention in these columns.

The statistics of waste rubber collection are, necessarily from the nature of the enterprise, a little vague, but it probably is a conservative statement to say that, taking the world over, 275,000 tons of scrap rubber is collected during the year. We have imported during the last two or three years about 20,000 tons of this material annually, and have probably collected 125,000 tons of our own, giving our reclaimers something like 145,000 tons a year as material for their operations. This results in a product of reclaimed rubber in this country of approximately 85,000 tons. As we use in the neighborhood of 50,000 tons of new rubber, it will be seen that the dump heap contributes 70 per cent. more material for our manufacturing plants than the Valley of the Amazon and the Eastern plantations combined. It probably would be a conservative estimate to place the value of the waste rubber collected in this country in a year—based on an average of 7 cents a pound—at \$17,500,000; and it would be safe to say that the value of the annual reclaimed product—

including the 20,000 tons of waste from abroad—would be somewhere from \$25,000,000 to \$28,000,000. In view of which it is not to be wondered at that the men responsible for this great reclamation of waste material should feel themselves entitled to gather at the banquet board and eulogize their industry. They are among the great conservationists.

FOUR MONTHS OF THE NEW TARIFF.

IT may be rather early to formulate definite conclusions—that is, conclusions not open to later revision—on the working of the new tariff, but the report recently issued by the Department of Commerce at Washington, giving the exports and imports in various industries for the first four months under the operation of the new schedule—from October 1 to January 31—certainly furnishes data for interesting speculation, or, as the moralists are wont to say, “food for thought.”

During these four months under the new tariff there has been a general decrease in the value of imported materials for manufacture of \$47,000,000, or 10 per cent., while importations of finished manufactured products increased nearly \$10,000,000, or 6 per cent. The report shows that there was a decrease in imports in practically every line of raw material for manufacturing purposes. The volume of crude rubber imports during these four months amounted to 36,800,000 pounds, as against 42,500,000 pounds during the same months a year ago—or a reduction of 13 per cent. In value, the imports of crude rubber, including substitutes, dropped from \$38,750,000 to \$21,250,000, or a decrease of over 45 per cent. But of course a substantial part of this decrease must be attributed to the lower prices of rubber that have prevailed during the past season. The decrease in volume of imports, however, is certainly suggestive.

While the first four months of any new tariff schedule cannot be properly taken as a criterion, the showing made by the report of the Commerce Department is certainly interesting as an indication of tendency.

THE AMERICAN CONSUMPTION OF RUBBER.

NOTWITHSTANDING the falling off in the importations of crude rubber during the last few months, under the new tariff law, as mentioned above, we still conspicuously lead the world in rubber consumption. A carefully computed tabulation which appears on another page shows that in 1913 Americans consumed rubber to the extent of 1.06 pounds *per capita*. This is over twelve times the rate of consumption in Italy, over seven times

that of Russia (notwithstanding the long winters and deep snows of that country, which call for the general use of rubber footwear), over three and a half times the rubber consumption of Germany, over twice that of France and more than twenty per cent. greater than that of our nearest rival, Great Britain. Generally speaking, we have for a number of years used one-half of the entire world's crude rubber supply. Possibly under the new tariff this ratio may be somewhat altered and more than one-half of the total crude supply go elsewhere, but the consumption in this country of rubber manufactured goods is not at all likely to decrease. As a matter of fact, with the constantly growing popularity of motor vehicles—an increase much more rapid in this country than anywhere else—our proportionate consumption of manufactured rubber goods is likely to be greater during the next few years rather than less.

A GENUINELY HELPFUL SORT OF HELP.

THE press has recently given a great deal of attention to a particularly successful and philanthropic automobile manufacturer who has embarked on a profit-sharing system of unheard-of proportions, the report being that workmen who have been getting \$4 a day were to have their wages practically doubled, that scrubwomen and office boys were in some cases to be paid \$5 a day, and so on up and down the payroll generally—the underlying principle of the plan evidently being to remunerate employes with a munificent disregard of all established industrial standards.

All of which is most altruistic and suggestive of the dawning of the Golden Age, but somewhat upsetting to the settled order of things. If, for instance, the general market price for an office boy's services is \$5 a week, it is distinctly disturbing to the office boy market to have it widely promulgated that in one particular enterprise these services are to receive five times the market price, with other lines of endeavor rewarded in proportion. It is not to be wondered at that the manufacturer's plant was immediately surrounded by vociferating mobs. Let it be generally exploited that a certain locality is overflowing with easy money and that point is bound to become a storm center compared with which the activities of the ancient Goths and Vandals were mild and mannerly.

The Ford experiment is certainly exceedingly interesting, and its beneficiaries are to be sincerely congratulated on their suddenly improved conditions; but many economists entertain grave doubts as to the ef-

fect of this new departure, not only on industry generally but on the particular industry involved.

It is quite possible, however, to help employes without doubling their pay. The best help that can be extended to them is to widen their horizon and increase their efficiency. That education is to be preferred to money in hand is proved by the great number of thriving institutions of learning all over this country and the vast sums in the aggregate expended by fond parents to secure for their children what these institutions have to offer. To give employes a chance to educate themselves is, therefore, quite as great a gift, if not an even more valuable one, than to give them an increase of pay. An item in the news columns of our March number spoke of a rubber manufacturing company in New Jersey that is preparing an auditorium in which its employes, and particularly the younger people, both boys and girls, can meet two evenings in the week to get the benefit of illustrated lectures covering the various departments of the industry with which they are connected. Now here is a helpful service, as it must necessarily broaden the outlook of these young workers and give them some idea of the relationship between the particular piece of work they are doing and the whole industry of which it is a part.

Perhaps someone may raise the objection that to give a workman instruction beyond the particular line of work that he is called upon to do is to make him discontented with his present task and fill him with an ambition to do something else, something better and more remunerative. But that is no objection. Every workman should be permitted to push up as high as he can. It is always easier to fill the lower positions than the higher ones. Besides, quite apart from the manufacturer's own personal interest, it is his duty as a good citizen to encourage all those in his employ to become as useful as possible. Broadly viewed, it seems quite reasonable to ask if it is not really a greater benefaction to open wide to the workingman the door of opportunity than it is to give him immediate and exceptional access to the till.

THE ANNUAL SHOW LOSING FAVOR.

AFTER the recent automobile show in Manchester, England, a vote was taken by the manufacturers and traders as to whether it should be held again next year. A general ballot of exhibitors showed 413 against its repetition to 220 for it, while a vote of the manufac-

turers was 42 against and 14 in favor of another show. It will be recalled that at the time of the automobile show in New York last January most of the large tire manufacturers decided to abstain from participation, on the ground that the results were not commensurate with the outlay, and on the further ground that these annual functions cause a considerable disturbance of the regular routine of business.

Industrial expositions held from time to time to show the progress made in any line of manufacturing activity are undoubtedly desirable, as they are instructive, serve to increase the enthusiasm of those connected with that particular industry and excite interest in it among people generally. Expositions of this sort are without doubt profitable to the trade, but the regular annual show—promoted largely as a vehicle of advertising—is evidently losing favor on both sides of the water.

THE LATEST EXPLOIT OF INVENTIVE GENIUS.

WE Americans are rather fond of boasting, in our modest way, of our national genius for invention; and this contention seems to be fairly well established by the great number of patents—now reaching considerably over a million—that have been issued by our patent office. As one result of this great multiplicity of original devices we pay, ordinarily, very slight attention to new inventions, unless they are of an epochal character—as, for instance, wireless telegraphy and the much feared dictagraph.

But here comes an invention that is bound to command attention. Some humanitarian has devoted a great deal of thought to the unhappy condition of the people who ride on motor cars, who, in his opinion, between the electrical mechanism of the car and its continual vibration, and the fact that it is completely insulated by its rubber tires, are liable to become surcharged with electrical forces, to the serious undoing of their nervous systems. To remedy this disquieting situation, so menacing to our national health, he has invented a kind of trailer reaching from the body of the car to the earth, which conducts away the electrical currents as fast as they are generated, so that the motorists go unscathed.

This new invention will doubtless prove a great boon, and all motoring mankind will rise up and bless the inventor, but it is susceptible of one improvement. There should be an additional appliance—a sort of side wire—to convey to the absorbing and purifying earth the usual language of the natural man who, far from home and without a spare tire, encounters a blow-out.

WHAT THE RUBBER CHEMISTS ARE DOING.

[Authors of the following articles have appeared in some of the foreign publications.]

IN the "Kolloid Zeitschrift," Vol. 13, page 265, Spence and Young make their seventh contribution on the "Theory of Vulcanization." These authors vulcanized two compounds at temperatures varying from 50 degs. C. to 75 degs. C. at intervals of 5 degs. Compound A, which contained 90 parts of extracted plantation rubber and 10 parts of sulphur, after being kept for 90 days at 75 degs. C. contained only 0.32 per cent. combined sulphur. Compound B differed from compound A in that it contained 1 per cent. of acetone soluble substances. Compound B showed a regular increase in the velocity of vulcanization, as measured by the combined sulphur, with increase of temperature. It was not possible to observe any critical temperature at which vulcanization started. From results obtained a temperature coefficient of 2.84 is calculated which is in accordance with that required by a chemical reaction.

The authors also carried out vulcanization experiments with extracted plantation Pará, extracted gutta percha and extracted and purified balata. These substances were compounded with 37 per cent. sulphur and vulcanized. It was found that these hydrocarbons all vulcanized at the same rate and yielded the same end-product ($C_{10}H_{16}S_2$)_n of identical physical properties. As results of these experiments the authors conclude that the vulcanization of Pará, gutta percha and balata is a catalytic chemical reaction, that vulcanization takes place at all temperatures, and that the same compound ($C_{10}H_{16}S_2$)_n is always formed, provided there is an excess of sulphur.

In the "Gummi Zeitung," Vol. 28, page 747, E. Fickendey contributes an article "On the Effect of Scraping the *Manihot* Tree on the Yield of Rubber Obtained." In this article attention is called to the German patent No. 265,937 issued to the government of Cameroon for a process for increasing the yield of latex of the *Hevea brasiliensis*. The process consists in scraping, prior to tapping, the external portions of the bark as far as the green cork cambium. This scraping is repeated at definite periods of time during the tapping season. Trees so scraped nearly always yielded twice the normal output of rubber and in some cases four times the amount.

In the case of *Kickxia*, it was found that this scraping had no effect on the yield of latex and it is suggested that this fact is probably connected with the observation that the *Kickxia* tree does not exhibit what is known as wound reflex. It was therefore of interest to determine whether a tree such as the *Manihot*, which does exhibit the property of wound reflex, would be affected by this scraping of the bark. It was actually found that this scraping process did materially increase the yield of latex in the case of the *Manihot*, altho the increase was not quite so marked as in the case of the *Hevea*.

In the "Journal of the Society of Chemical Industry," Vol. XXXII, page 1041, W. A. Caspari contributes an article on the "Composite Nature of Raw India Rubber." Attention has been called by previous investigators to the fact that crude rubber is not completely soluble in the usual solvents and that it consists of a soluble and an insoluble portion. Caspari found that by using petroleum ether, B.P. 40 to 65 degs. C., a very satisfactory separation of the component parts of the rubber could be effected. By means of this solvent it is possible to obtain two distinct bodies, which may be described as soluble and insoluble rubber. The soluble portion is a colloid of relatively slight mechanical strength and has a pronounced tendency to become soft and sticky, especially on the application of heat. With solvents it forms a transparent solution and does not swell very materially prior to solution. The insoluble pectous portion is a colloid of considerable

elasticity, with a tendency to retain its structure in the presence of solvents, tho subsequently swelling to a "jel," usually with increase in volume. Both portions are doubtless constituted of the same hydrocarbon and have about the same specific gravity. The author constructed an apparatus for determining quantitatively the amounts of these two constituent parts of the rubber and gives the results of the determinations carried out with a variety of crude rubbers.

MANUFACTURE AND PROPERTIES OF SUBLIMED WHITE LEAD.

SUBLIMED white lead is the commercial name for the basic sulphate of lead produced by the oxidation of galena, the sulphide of lead, under the intense heat of an oxidizing atmosphere. The violence of the combustion produces a white sublimate, which, when purified, is known as sublimed white lead.

Commercial sublimed white lead, however, contains a higher percentage of lead sulphate than is required for its theoretical formula, conditions being so adjusted that a compound is obtained showing about 16 per cent. of lead oxide.

Sphalerite or sulphide of zinc is present in nearly all non-argentiferous lead ores, and when it produces zinc oxide to the extent of about 6 per cent., enhances the value of the pigment.

Hard coke is used as fuel, with metallic iron and limestone as fluxes, together with the silica present in the ore. Blue Fume (or sublimed blue lead), which is frequently used as additional charge material, is formed in the smelting of lead ores, and is found to contain about 35 per cent. of lead oxide and about 50 per cent. of lead sulphate. According to Mr. John A. Schaeffer, of the Picher Lead Co., Joplin, Mo., this fume pigment (or sublimed blue lead), ground in oil, is being rapidly adopted for the protection of iron and steel.

The oxidizing furnaces (two of which are considered a unit) consist of oval iron water-jackets on a solid brick base, with a small tap-hole for the continuous removal and sorting of slag and metallic lead. Immediately upon feeding the charge into the furnace, the temperature of which is maintained at a point of incandescence, sublimation occurs with great violence, the volatilized lead passing upward into the combustion chamber. A powerful fan draws the condensed fume onward through the cooling system into the bag room, which is of a special type somewhat like those used for the collection of all fumes. In this room are three rows of hoppers, each carrying 24 bags. The gases are forced through the cloth of the bags, while the sublimate is deposited.

Sublimed white lead as removed from the hoppers is white in color. It consists of very fine amorphous particles, about 1/35,000 of an inch in diameter, its specific gravity being 6.2.

Its composition is approximately 78 per cent. lead sulphate, 16 per cent. lead oxide and 5.5 per cent. zinc oxide. The lead oxide present is chemically combined as a basic sulphate of lead, the sulphate of lead in excess of the amount required for the theoretical formula being held by practically all authorities to be neutral sulphate of lead.

In common with other white lead compounds, sublimed white lead is most valuable as a paint pigment when compounded with zinc oxide and a small percentage of inert crystalline pigment. It is being extensively used in compounding the finer grades of rubber goods. Moreover, it practically inhibits the corrosion of iron and steel, when applied as a protective coating, even after long exposure, thus preventing decay by eliminating the cause which destroys the metal and lengthening its life as a structural material.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

The Rubber Crisis in Brazil.

The true condition of affairs on the Amazon, particularly in its relation to the rubber industry, has been difficult to arrive at. Cables from Pará and Manaus told of failures, of rioting, of chaos. Calamity howlers predicted prompt annihilation of all business. The facts are told in the following pages by a member of the Editorial Staff of THE INDIA RUBBER WORLD now in Pará.

IN spite of newspaper talk of revolution and riot the city of Pará is as safe and as quiet as ever it has been. Business troubles? Yes! lots of them! Failures? Scores and scores; but business goes right on, and the end of the rubber business is not in sight.

In order that the present situation in the Amazon Valley may be understood, it is necessary to review the causes which have led up to it. It might be expressed in one phrase—unlimited credit to irresponsible parties, a condition that is no more. Retrenchment is universal. Brazil has her nose to the grindstone and the operation is proving to be her salvation.

OLD CONDITIONS BEFORE THE CRASH

The trouble started years ago, when the Amazon was the only real source of the world's supply of rubber. It was not a question of how the rubber was taken out, or whether the financial plan was a sound one or not. It was only necessary to get rubber to the market, and the high prices, natural or artificial, took care of the rest. There seemed to be only one way and that was for the aviador to extend credit to the aviado, and the aviado to the *seringueiro*. As long as these three factors working together secured the rubber all was well. Even if the price was low, and did not balance the various indebtedness charged against it, the annual credit for goods was issued and paper profit swelled on the books of both aviador and aviado.

Be it remembered that the *seringaes*, or rubber districts, are owned by men who live in Pará or Manaus and rent them out. The owner usually has a wholesale supply house in Pará or Manaus and is called an "aviador." The man who rents the *seringal* is called an "aviado." He is trusted by the aviador with thousands of dollars worth of goods in a season. The basis of this transaction is the expectation that the aviado will pay in rubber. The aviado, who is in charge of the *seringal*, trusts the *seringueiros* with supplies and sends them off to gather

The aviado and *seringueiro* agree on a price for the rubber. Sometimes the latter has a balance coming to him, but he usually is in debt, and heavily, to the aviado. This makes no difference, however, and he always returns to his *barracão* with more supplies, to be paid for in rubber.



Seringal ON THE JURUA RIVER.

It is the same with the aviador who receives the rubber sent down the river by the aviado. The account is credited with the full value of the rubber as the aviador does not make money on the rubber thus received but on the goods which he ships back to the aviado.

In the Acre district many of the owners of *seringaes* are also storekeepers or aviados. Some of them own and operate steamers which carry the rubber to Pará or Manaus and return laden with goods. They sell goods to other aviados on credit and accept rubber in payment. These *seringal* owners are potentates living in far away places, surrounded by ignorant natives, and for the most part uneducated; so it is little wonder that they have often been harsh and cruel in dealing with the *seringueiro*. At home they were all powerful, dispensed favors and goods on credit with a lavish hand. These men, if sold out, could not produce a cent of actual money; yet they were trusted by some aviador in Pará or Manaus for hundreds of thousands of dollars.

As long as Brazil's supremacy as a world's rubber producer was unchallenged there was not a cloud in the sky. If the market was low and rubber sold below cost, it did not matter for the books showed a large profit on the goods supplied. But the day of accounting finally

came, and the unsoundness of the system became apparent. The creditors of the aviados demanded real money and refused to ship more goods. The price of rubber remained low and credit men were frightened. The aviadors' assets proved to be large



ADMINISTRATION BUILDING ON MUIR PLANTATION, STATE OF PARÁ.

rubber. From the moment they disappear in the forest all control over them is lost. They are absolutely without restraint or responsibility. Yet it is remarkable that as a rule they prove trustworthy and return to the aviado with the rubber.

debit balances with Upriver aviados—paper profits only that did not contain one cent of asset value. Old established houses commenced to totter and then fall. One after another was forced into liquidation, until the list had grown to many scores of failures in Pará alone, with the enormous sum of \$20,000,000 involved.

And even then it was difficult for the improvident Brazilian to think of economy. The habit of borrowing had become second nature, and only the cessation of credit brought him at last to his senses.

Finally, Northern Brazil thoroughly realizes that the day of retrenchment has come. Heretofore a financial stringency has been evaded by a call of distress for more rubber, and more rubber always saved the situation.

If any other city in the world had suffered from an avalanche of failures and compositions such as has descended upon Pará, business would have stopped for years and everybody been in mourning. In Pará, however, there is but little gloom and the calamity howlers are mostly on the outside. How extensively the business houses have suffered is shown in the following statement obtained from one of the banks there.

LIST OF FAILURES AND COMPOSITIONS IN PARÁ FROM
JANUARY 1, 1911, TO DECEMBER, 1913.
FAILURES.

Paulo Da Cunha Ferreira	\$17,000.00
Campos Guimaraes	115,000.00
Figueredo & Silva	321,000.00
Pereira, do Amaral & Ca.	46,000.00
Antonio Jose de Carvalho.	71,000.00
Martins, Gonçalves	(7,000.00)
J. Franco & Ca.	207,000.00
Cardoso, Pinho & Ca.	162,000.00
Cardoso & Pinho	72,000.00
Nunes Sobrinho & Ca.	44,000.00
J. R. Da Silva	21,000.00
Caesar de Moura, Serra & Ca.	66,000.00
A. Tasso	22,000.00
Van Dick & Tocantins	200,000.00
Martins Abreu & Ca.	800,000.00
B. Antunes & Ca.	3,500,000.00
Cordeira Neves & Ca.	850.00
Francisco Alves Ferreira & Ca.	15,500.00
Mello & Ca.	3,000,000.00
Pereira, Bessa & Ca.	4,700,000.00
Julio Pereira & Oliveira.	300,000.00
A. J. de Sousa Pereira.	250,000.00
Martins & Alvoeira	250,000.00
A. F. Dias	5,500.00
Silva Cunha & Ca.	188,000.00
Motta, Nogueira & Ca.	48,500.00
A. Meirelles & Ca.	774,500.00
Bastos & Rocha	118,500.00
Cristovan, Spinelli & Ca.	10,000.00
Dias & Ca.	127,500.00
Alexandre Ferreira & Ca.	45,000.00
Total	\$15,564,850.00

AGREEMENTS WITH CREDITORS

Serra & Ca.	\$136,000.00
Apparicio Mattos	82,500.00
Costa Pinho & Ca.	89,000.00
Gomes de Oliveira & Ca.	72,000.00
J. Vidinha & Ca.	267,000.00
Jose Furtado de Mendonça.	1,800,000.00
Braga Sobrinho & Ca.	728,000.00
Jose Alvoeira Gomes Araujo.	45,000.00
Cunha Cerqueira & Ca.	162,000.00
Leopold Wolf & Ca.	206,000.00
Silva Ribeiro & Ca.	145,000.00
Cerdeira & Bordallo	27,500.00
A. Moraes & Ca.	63,800.00
Mathias, Balin & Ca.	22,500.00
La Rocque, Frota & Ca.	477,000.00
J. Moreira & Ca.	30,500.00

Total	\$4,353,800.00
Failures	\$15,564,850.00
Compositions	4,353,800.00

Grand total \$19,918,650.00

RESUME OF PRINCIPAL BANKS, BANKING HOUSES AND EXPORTING HOUSES INTERESTED IN THE FOREGOING
FAILURES AND COMPOSITIONS, IN PARÁ, 1913.

London and Brazilian Bank, Limited.	\$19,000.00
Agencia do Banco do Brazil	4,000,000.00
Banco do Pará	212,000.00
Banco Commercial do Pará.	450,000.00
Banco de Credito Popular.	3,00,000.00
J. M. Pires	80,000.00
Moreira, Gomes & Co.	225,000.00
Zarges, Berringer & Co.	180,000.00
General Rubber Co. of Brazil.	10,000.00
Pires, Teixeira & Co.	20,000.00

Total

\$5,416,000.00

THE GOVERNMENT'S HEAVY EXACTIONS.

While the business houses are doing their part the government still exacts the old-time heavy rubber tax.

The official value or "Pauta" is fixed every week on the average of the prices paid. Fine rubber, coarse rubber, and cauchos are subject to the following duties, at 190 per cent



YOUNG *Hevea* ON TAPAIOS PLATEAU.

on the official value, $2\frac{1}{2}$ per cent. of the product of the above $19\frac{1}{2}$ per cent. towards keeping up the Santa Casa Hospital, $\frac{3}{8}$ of 1 per cent. on the official value towards the erection of an exchange building (which, by the way, was started and has since been taken down), 1 per cent. on the official value payable to the municipality.

Fine rubber in sheets, coarse washed, and caucho washed, pay: 18 per cent. on the official value, $2\frac{1}{2}$ per cent. of the prod-

uct of 19½ per cent. as above, ⅓ of 1 per cent. as above, 1 per cent. as above.

Federal district tax 18 per cent. on the official value of all grades.

BOLIVIA'S SHREWDLIKE MOVE

As against this there is the very shrewd move on the part of Bolivia, as shown in the following law passed early in December. This edict was the result of a law passed by the Brazilian Government putting a heavy tax on all Bolivian rubber. Bolivia in turn passed a law that put the export tax at from two to six per cent. ad valorem. This naturally increased the shipments of Bolivian rubber and incidentally caused much Brazilian rubber to be sent into Bolivian territory to appear later as Bolivian rubber.

Sessions Hall of the National Congress,
La Paz, November 13, 1913.

Juan M. Sarracino,
Atilano Afaricio,
J. V. Zaconeta, S. S.,
Juan Alvarado, D. S.,
Rene Renjel, D. S.

I, therefore, promulgate the decree in order that it may be executed as a law of the Republic.

Given in the City of La Paz, the 18th day of November, 1913.

Casto Rojas,
Minister of Agriculture.

Certified:
Manuel A. Elias,
Under Secretary of Agriculture.



EXPERIMENT STATION—*Hevea* PLANTING—STATE OF PARÁ.

REPUBLIC OF BOLIVIA

Official Registry of Laws, Decrees, Resolutions, Supreme Ordinances and Other Documents.

La Paz, December 5, 1913.

Ismael Montes, Constitutional President of the Republic:

Inasmuch as the National Congress has sanctioned the following law, the National Congress decrees:

Article 1. The export tax on india rubber will be collected by all the custom houses of the Republic, in accordance with the following scale:

(a) When the quotation of rubber is from 25 to 36 pence, the tax shall be 2 per cent. ad valorem.

(b) The tax shall be 4 per cent. when the price ranges between 37 and 48 pence.

(c) The tax shall be 6 per cent. when the price exceeds 49 pence.

Article 2. The same scale of percentage shall apply to the export of the ordinary classes, Sernamby, Mollendo and Caucho, with the rebate of 30 per cent. on the value fixed for fine rubber.

Article 3. In case the tax imposed by neighboring foreign custom houses shall be less than that of Bolivia, the Executive Power can make a proportionate reduction in the rubber export duties.

Article 4. In fixing the official value, there shall be taken 70 per cent. of the London market quotations, which are transmitted every fortnight by the Bolivian consulate in London.

Communicated to the Executive Power for official action.

WHAT PROMINENT BRAZILIANS SAY ABOUT THE SITUATION

There is a beautiful island in the Caribbean, not so very far from the mainland, where those who live on the Great River have been accustomed to spend a few months each year. They have built themselves tiny bungalows, and they resort to a little hotel where Portuguese is spoken, and where they are disposed to talk much more freely on home matters than they would either in Pará or New York.

One of the first men I met there was one who formerly sent his own boats for trade far up the river, who, with his associates, worked great stretches of forest for rubber, but who sold all of his interests during the rubber boom. Since that time instead of departing to Paris as is customary, he had quietly tried to bring his compatriots to a realizing sense of the disaster foreshadowed by such high prices, together with the coming flood of plantation rubber from the East. He was far from optimistic. Indeed, he was distinctly gloomy.

"Individually," said he, "I care not. But my heart bleeds for my country. Are we to see the grass growing in the streets of Pará? Is Manáos, that wonderful young giant of a city, that oasis of civilization in the midst of the jungle, to be a heap of ruins? Will these two cities, like Tyre and Sidon of old, be but places where fishermen do spread their nets? The fault is ours? Perhaps. Yes! we should have foreseen this

evil day. Indeed, if you will look back through the files of our newspapers and read many of our governmental reports you will find the danger and remedy explicitly set forth. But in a new country, who believes in conservation? Who plans for the future? Did the North Americans save or destroy their wonderful pine forests? Did your wheat farmers conserve the soil? Is not the farming country of New England stripped of its fertility? The vastness of your resources, the influx of laborers and your marvelous industrial development are all that have prevented you from being just as we are.

"Great efforts were made by us—greater than the world knows—to prepare for the future. The efforts, however, appear to be in vain. We had the desire, the knowledge, but neither capital nor labor to carry out our plans. I acknowledge that our cities should have been made as safe as the Americans made Havana; that our experiment-station and plantations should be as healthy as the Panama Canal Zone. But what does the world know of the demands of the federal government for its share of the rubber millions? Our most capable and enterprising business men were British, American, German and Portuguese, who were with us only to gain a competence and then go home. None thought of Pará or Manáos as a home; therefore they were not interested in the future—in our future.

"Concessions! yes, they took them greedily and we paid 'through the nose.'

"We should have colonized and we did institute many efforts to that end. In Sao Paulo we were successful, but to get settlers for the rich lands bordering the Amazon we signally failed.

"Do you recall some five years ago sending me a man who represented a great syndicate that wished to colonize a huge tract up the river and that had millions back of it? I wrote

Mamiore railroad, if put into rubber plantations down the river, and that the cost of our Port of Pará improvements, if invested in the same manner, would have been our salvation. But no foreign bonds could be floated for planting rubber, particularly when we were getting constantly increasing quantities of rubber from up the Amazon. Every attempt to plant on any



ROADWAY TO FLOATING DOCKS.

considerable scale was either frowned upon or reported against. We sent commissioners abroad and pigeon-holed their reports.

"When the English bought a rubber plantation at Santarem, they should have at once been granted a bonus, medical attendance and if necessary supplied with laborers and the export duty thrown off.

When Commandante Benedict came to us year after year,



A PART OF THE DOCK SYSTEM, PARÁ.

you guardedly that nothing could be done, for you to advise your friends that the project was dangerous. I tell you now that government officials in their folly, scented in it a revolutionary plot, and those who would have helped us were given the cold shoulder.

"We can see today that the money spent on the Madeira-

genial, friendly, alive with wise suggestions, ready to foster great enterprises, we ought to have helped all that we could. His wireless plant between Pará and Manáos, his rubber plantation, all should have had the fullest help, as they were pioneer enterprises which, once successful, would inevitably bring in others.

ample evidence that a good fight will be put up to save the situation.

The Amazon Valley produces little of the food consumed. It is imported at an extremely high cost, and it is this food question that is receiving the earnest attention of thinking Brazilians.



RUBBER PACKS READY FOR SHIPMENT, PARÁ

In the "Folha do Norte," of Pará, March 4, 1914, the following notice appears:

"The Mayor of Itaituba, Brazil, gives notice to those whom it may interest that from January 20 to May 20 free passage will be granted to those persons who may wish to devote themselves to the cultivation of cereals and to planting coffee, cotton and tobacco. Premiums will be awarded to those who show the best results six months after settlement, the prizes including free grants of land in the locality, with medicines and medical treatment gratis. Signed by Raymundo Pereira Brazil, Mayor of Itaituba, 46 Rua da Industria."

Avilino Chaves, a prominent rubber merchant of Guanabara, district of Acre, is distributing seeds and encouraging the planting of beans, corn and rice. The captains of the river boats say that never in the history of Amazon rubber has there been so much planting and cultivation along the rivers.

The *seringueiro* has never been a planter in any sense of the word heretofore, but now he has risen to the occasion and has a little patch of corn, beans and mandioca growing near his *barracão*.

The aviators of Pará and Manaus have sent word to their various agents that they are only allowed to give credit for supplies to the *seringueiro* of good standing, and that he must return with the rubber at the end of 15 days. Thus the rubber gatherer can continue in his livelihood as before, but must work harder. More responsibility will be demanded of him under the changed conditions—which will surely produce better results. This will put an end to the business of the piratical *irregulao*, a traveling trader who seduces the *seringueiro* into selling him the rubber that should go to the aviado to pay for credited supplies.

THE PROBABLE RUBBER SHORTAGE

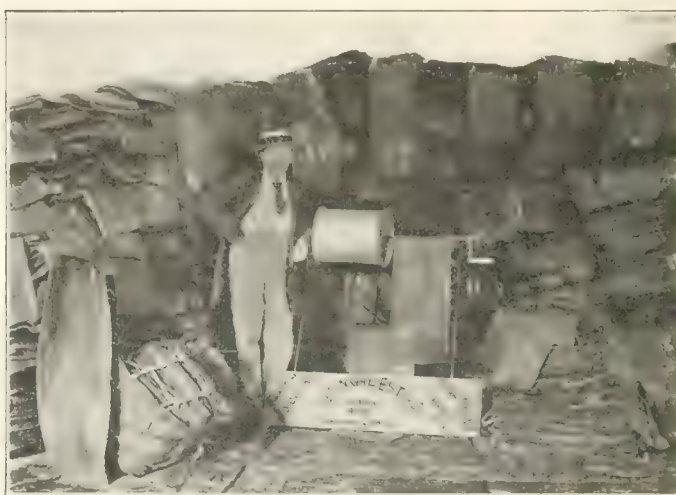
There will be a shortage this year no doubt. There is a shortage of 3,000 tons now, and when the season closes this will probably have increased to 4,000 tons, but that is only 10 per cent. of the total—a mere nothing, in fact, when one thinks of the disturbances going on which tend to curtail production. It is really marvelous that the production is so large. Next year the indications are that the product will fall short of this year. Ten thousand Cearense have gone down the river to their homes. Ceara has a bumper cotton crop, and there will be a shortage of hands to harvest it; consequently there will

be no necessity for the Cearense to look for work away from home.

It is admirable to see a stricken people face adversity with calmness and willingness to accept the changed conditions. The state and federal governments are in serious financial difficulties. Employees have not received their pay for eighteen months. There is open denunciation of the unscrupulous politicians, whose greed and selfishness have brought their country, state and people to the present bankrupt condition. There are some, of course, who talk of uprisings to rid the government of politicians. But that does not stop the rubber gatherer from doing his daily task. In the meantime, many practical reforms are quietly being instituted, and Pará is getting ready to ship better rubber, and hoping to grow it in competition with the rest of the world.

THE MENDES MACHINE

All of the spectacular and expensive suggestions brought forward by the *Defesa da Borracha* for maintaining the supremacy of Pará rubber have dropped out of sight. These had finally crystallized into extensive washing factories, none of which were installed in Pará. The only system that has taken root is the J. A. Mendes process for smoking rubber, which is already used in many *seringacs*. The apparatus used is very simple. It consists of a cylinder, mounted upon legs over the usual smok-



THE MENDES MACHINE FOR SMOKING RUBBER AND ITS PRODUCT.

ing cone. As the latex is slowly poured over the cylinder it is revolved so that the smoke rising from the cone coagulates the latex into a thin film of rubber. When a sufficient number of films—one above the other—have been coagulated by this method, the mass is cut off and is in the form of a thin slab of clear, clean, perfectly cured fine Pará rubber. The illustration shows the machine in the foreground, but without the smoking cone. In the background is piled the finished product.

CATTLE RAISING AND RUBBER PLANTING

One of the economic problems confronting northern Brazil is the food supply. Now everything, with the exception of farina, is imported. Xarque, or dried meat, imported from Argentina, costs 60 cents a pound, while fresh beef can be bought for 45 cents.

Cattle raising is an industry that is comparatively unknown and for which the Amazon Valley offers many natural advantages, tho there are some difficulties to contend with. In the first place, pasture must be made. This involves clearing of the land and fencing. The selection of the proper grass for planting is more complicated than it would seem at first thought. To the layman all grasses are alike, but that is not so. When a definite object is to be obtained an intimate knowledge of

the characteristics and habits of the grasses is very necessary.

Mr. Andre Goldei, a co-worker with the late Doctor Huber on this subject, has devoted many years to the study of the various grasses indigenous to northern Brazil. After examining and rejecting more than 100 such varieties, several varieties of foreign grasses were sent for and placed under observation. The result was the discovery of a grass which acclimatized itself readily and developed desired characteristics. It was the genus *Parpalum dilatatum* for high land and *Parpalum vagatum* for the low land that gave the sought for results.

This grass is of the bunch grass variety that is easily planted by simply inserting one of the tubers in a small hole in the ground made by a pointed stick. It is not necessary to cover the holes. The grass grows naturally to the height of only 18 inches, and when pastured it remains about 6 inches in height. It prevents the growth of weeds and bush, without growing to a great height as is the case with the indigenous grasses. Being



BUNCH GRASS TO BE GROWN WITH *Hevea* RUBBER.

a bunch grass with comparatively short roots it has been demonstrated that rubbers can be grown with it successfully, thus eliminating the costly clearing operations. The grass itself is so succulent that cattle pastured among young rubber trees prefer the grass.

This system of a pasture cover is being used in the fruit orchards of Europe with marked success. Will it not solve the tropical problem of costly clearing in rubber culture when the spontaneous growth and high cost of latex make close clearing prohibitory?

It should be remembered that gutta percha is growing scarcer every year, and that balata is in many ways taking its place. With the exhaustion of the supplies in Venezuela and the Guianas will come an increase in price, and an exploitation of the great balata reserves bordering on the Amazon.

Perhaps the most hopeful sign is the interest that certain capitalists are taking in banana raising. There are literally millions of acres of wonderful banana lands close to deep water in the State of Pará. Once the government is forced to keep its hands off such a project the Brazilian banana will be found in New York and London, a close competitor with that grown in Central America.

With the whole tropical world hunting for good cocoanut land it will not be long ere cocoanut-growing on the Amazon will assume large dimensions. There is fine land, an ideal climate—indeed, everything needed to make the crop a success.

In Pará the stores are well stocked with goods, and sales are going right on. All of the civil officers receive—not money (salaries are from one year to two years behind) but an ac-

knowledge of indebtedness. This is taken as cash by the storekeepers, and turned back to the government in payment of duties, taxes, etc.

Laborers who in flush times handled rubber at \$4 a day are today contentedly working for 60 cents a day. The people are surprisingly happy. They need not starve, they cannot freeze, and the city is unusually free from disease.

PROPOSED EXPOSITION TO PROMOTE TRADE IN CHILE

The Chilean American Permanent Exposition Co. has been organized at Santiago, Chile, with a capital of \$20,000 United States gold, to establish a permanent exposition of American products at Santiago. The exposition building erected for the Chilean Centennial Exposition of 1910 has been placed at the disposal of this company by the Chilean Government, and it is proposed to rent to American interests space in this building at so much per square foot per annum, including care, explanation, demonstration and operation of articles and machinery left on exhibition. The manager, A. Hamilton West, is visiting the United States, to confer with manufacturers and others who may be interested, and inquiries regarding this project should be directed to him in care of the Chilean Consul General, New York.

RUBBER CULTIVATION IN BRITISH GUIANA.

A colonial report as to agricultural conditions in British Guiana in 1912-13, shows the area planted in rubber is 3,080 acres, of which 2,700 are in *Hevea* and the remainder in *Funtumia elastica*, *Castilloa elastica* and *Sapium*.

There was a relatively active demand for *Hevea* plants during the year, 64,000 small trees having been sold by the Department of Science and Agriculture, while the private import of stumps numbered 114,000. Seeds were also imported from Surinam and the East.

Experimental tappings of *Hevea* trees planted during 1907-08 and 1908-09 gave satisfactory results as to the quality and quantity of the yield. Cultivation of rubber at the government experiment stations was systematically carried out; a large number of balata trees being likewise planted.

GENERAL FOREIGN TRADE OF THE LEADING TRADING COUNTRIES.

STATISTICS covering imports and exports of five great trading countries, viz., the United Kingdom, United States, Germany, France and Belgium, are now at hand and make interesting reading. From the figures which are shown below it will be seen that the exports of the United States last year were about equal to those of the United Kingdom and Germany, but that the increase in exports was only half the increase of the United Kingdom and less than one-third of the German increase. In the volume of importations the United States shows hardly more than one-half that of the United Kingdom, and about 70 per cent. of Germany's imports.

IMPORTS OF LEADING COUNTRIES

		Percentage compared with 1912.
United Kingdom.....	3,296,890,000	+ 4.0
United States.....	1,793,038,480	+ 1.5
Germany	\$2,629,285,000	0
France	1,701,675,000	+ 3.2
Belgium	916,725,000	+ .63

EXPORTS OF LEADING COUNTRIES

United Kingdom.....	2,627,305,000	+ 7.2
United States.....	2,448,576,614	+ 3.5
Germany	\$2,478,150,000	+ 11.1
France	1,375,075,000	- 2.3
Belgium	715,365,000	- 6.2

Dr. Jacques Huber's Busy and Useful Life.

THE MARCH issue of THE INDIA RUBBER WORLD contained a mention of the sudden death of Dr. Jacques Huber, director of the Museu Goeldi, of Pará, which occurred in that city on February 18. Editorial mention was also made in the same issue of his great services to the rubber industry of Brazil, his many contributions to the literature of rubber botany and of the great sense of loss which will be felt not only in the Amazon country but everywhere where men are interested in the development of rubber production. It was not possible at that time to give as complete a story of his life as its exceptional usefulness demanded. Here is a more detailed account which will be of interest to his many friends.

Dr. Jacques Huber was born on October 13, 1867, at Schleithelm, Canton of Schaffhausen, Switzerland, being the son of the Rev. Emanuel Huber. In the year 1870 his parents removed to the city of Schaffhausen, where he attended school until his graduation in 1887. He then studied natural history at Basle, passing the teachers' examination in 1890. In the autumn of the same year he went to Montpellier (France), where he devoted himself wholly to the study of botany, under the guidance of Professor Flahault, with whom he maintained intimate relations up to the end of his life. Dr. Huber remained in Montpellier until August, 1893, meanwhile visiting Basle in the autumn of 1892, where he gained the title of doctor (with distinction). From Montpellier he went, in 1894, to Geneva, becoming assistant at the Herbario-Boissier Botanical Museum.

Early in the year 1895 he received, through Professor E. A. Goeldi, a call—which he accepted—from the newly reorganized Pará "State Museum of Natural Science and Ethnography" (now "Museu Goeldi"). In the following July he arrived at Pará and assumed the post of Director of the Botanical Section of the Museum. His first work was the laying out of the botanical garden, which, under his care and direction, was developed into one of the most attractive sights of the city. Moreover, during the earlier period of his work in Pará he undertook numerous scientific journeys to different parts of Amazonia and northern Brazil. A number of his trips of exploration were taken in the company of Dr. E. A. Goeldi. In others he was accompanied by other prominent Brazilian naturalists. From the year 1895 to 1905 he found time for one or more of these interesting and important excursions every year. During this time he visited the "Contestado," the Franco-Belgian frontier subsequently awarded to Brazil. He also visited the rivers Capim, Guama, Aramã, Purus and lower Acre. These are but a few of the many parts of Brazil which he explored on these occasions.

In these journeys Dr. Huber, in addition to his botanical and botanico-geographical studies, devoted much attention to hydrographic questions, on which he wrote a number of articles. Among his contributions to various Brazilian and European publications based on his observations in his different travels are the following: "Vegetation of Cape Magoary and the Atlantic Coast of the Island of Marajo," "Contribution to the Physical Geography of the Western Part of Marajo," "Vegetation of the Valley of the River Purus."

One of the most important works of Dr. Huber during the years 1895-1905 was the "Arboretum Amazonicum," the pictures in which were almost exclusively prepared from photographs taken by the author. Unfortunately, lack of time and money prevented the issue of more than four volumes out of the ten which had been contemplated. Other important contributions by him include "Elements of Amazonian Flora," as well as "Ceara Plants." The "Herbario-Boissier Bulletin" contained some

of his articles upon *Hevea* and other rubber plants, to which he subsequently devoted so much time.

At the end of March, 1907, upon the return to Europe of Dr. E. A. Goeldi, Dr. Huber was appointed Director of the Goeldi Museum. The time and energy required for his administrative duties forced him to give up his scientific journeys—a fact which he regretted all the more as the Pará government made more and more frequent calls upon his knowledge and experience as to rubber cultivation. Some brief excursions in 1907 and 1909 (particularly those to the new agricultural experimental station at Peixe-Boi, on the Bragança line) afforded him relaxation and increased his store of knowledge.

Notwithstanding the burden of his official duties, he found time for important botanical work, such as the continuation of the "Elements of Amazonian Flora"; while the rich botanical collections which Senhor F. A. Ducke, the entomological expert of the museum, brought back from his numerous journeys, furnished subjects for various treatises—as "Plantae Duckeanae" and other compilations.

The chief work of his later days was "Amazonian Woods and Shrubs," the first part of which summarized the information gathered during his explorations as to the distribution of Amazonian flora.

In the spring of 1911 Dr. Huber went to Europe to take part in the London Rubber Exhibition as well as the Turin International Exhibition, as representative of the State of Pará. Immediately afterwards, and likewise acting on behalf of the State of Pará, he commenced a journey to the East, for the purpose of studying the rubber plantation industry in Ceylon, Malacca and Dutch India. Early in the summer of 1912, after more than a year's absence, he returned to Pará. During the return voyage he had found time to elaborate his comprehensive and important report on "The Present State of the Cultivation of *Hevea Brasiliensis* in the Chief Rubber Producing Countries of the East," which was published by order of the Governor of Pará. In September, 1912, by instructions of the government, he undertook another journey, to attend the New York Rubber Exhibition.

These extensive travels and the labor they involved finally told upon his health, a matter to which he was disposed to give but scant attention. In October last he was seized with intestinal inflammation, and while the first attack passed, a relapse took place in January the gravity of which was apparent to his friends. As a last resort he was operated on for appendicitis—but unsuccessfully, passing away on February 18 last. It was undoubtedly Dr. Huber's devotion to his work that cut his life short at the comparatively early age of 47.

Owing to the esteem in which the late Dr. Huber was held in his adopted city great regret was expressed at his death by the chief officials, from the Governor downwards; and the state accorded him the exceptional honor of defraying the funeral expenses. The coffin was borne to the hearse by Dr. Carlos Silva, representing Dr. Eneas Martins, the Governor (absent through indisposition), and by the secretaries of State then in Pará. Other prominent personages attending the funeral included Dr. Dionysio Bentes, Mayor of Belem; Dr. Diodoro Mendonça and Lieutenant Heraclito Gurjas, cabinet officials; Colonel Calheiros de Lima, Dr. Martins Pinheiro, Dr. Raymundo Vianna, Senhor Franz Berringer, Senhor Adolpho Ducke, Dr. O. Labroy, and many others.

When the sad news of his death reached the headquarters of the Pará Commercial Association the building was immediately closed by order of the president. The members selected to attend the funeral on behalf of the association were: Senhores

Jose Amando Mendes, Benedicto Duarte Soares and Manoel Jorge de Pinho e Castro.

The papers of Brazil all speak in the highest eulogy of Dr. Huber and his great services to the City of Pará and its museum, and beyond that to the whole Amazon country. They mention in detail his contributions to technical—particularly botanical—literature, which, counting his books and articles in various publications, number over a hundred; and they all declare that his death is an irreparable loss to the science of rubber botany, and particularly to the famous Goeldi Museum.



GRAVE OF DR. JACQUES HUBER

of which for so many years he was the dominating spirit. In regard to the feeling entertained for him as a man, the following paragraph from one of the Pará papers is informing:

"His co-workers at the museum, down to the lowest day-laborer, have expressed their grief at the loss of the soul of the institution—a self-sacrificing head, a loyal colleague and a faithful friend. They all feel that a really great and good man has passed away in the person of Jacques Huber."

He was married in 1901 to Dona Sophia Muller, who, with a daughter aged 10 and two sons, 8 and 3 years of age, survives him.

PERNAMBUCO RUBBER EXPORTS.

The total rubber exports from Pernambuco were: 1910, 176 tons; 1911, 70½ tons; 1912, 96½ tons. For the last named year the separate destinations were: Germany, 37½ tons; Great Britain, 19 tons; France, etc., 40 tons. The falling off as compared with 1910 was largely in the exports from Pernambuco to North America.

CASUALTIES TO BRAZILIAN RUBBER STEAMERS.

Several casualties are reported to Brazilian river steamers carrying rubber. On January 13 the "Ajuricaba" sank in eight fathoms with a cargo of rubber estimated at the equivalent of \$150,000. Later the "Itucaman" went down at Manaus with 80 tons of rubber worth about \$125,000.

RESOLUTIONS ON THE DEATH OF MR. VAN VLIET

At the meeting of the Board of Directors of Goodyear's India Rubber Glove Manufacturing Co., held on March 26, the following minute, drafted by a committee appointed to present suitable resolutions referring to the death of Mr. Van Vliet, was adopted:

"Here in its appropriate place in the Minute Book of the Board of Directors of the Goodyear's India Rubber Glove Manufacturing Co., let us record those facts and qualities which relate most closely to the life of our deceased director and treasurer, Clinton Van Vliet, who passed from our midst on February 6, 1914. Born in Plainfield, New Jersey, of sturdy Holland ancestry, he was educated there in the public schools, from which he graduated with high honors, and he soon thereafter entered business life in New York City. In 1870 he became office manager of the Goodyear's India Rubber Glove Manufacturing Co., and afterwards treasurer, which position he retained to the time of his death. He was also a director of the company from October 30, 1891, to February 6, 1914.

"Ever courteous, beloved by his associates in the rubber industry, painstaking, keen and alert in his business dealings, zealous for the welfare of employees under his charge, this Board has lost in him a faithful co-worker and friend."

Mr. F. F. Schaffer was elected treasurer, and Mr. John D. Carberry was elected a director of the company, to fill the vacancies caused by Mr. Van Vliet's death.

ANOTHER VICTIM OF SYNTHETIC RUBBER.

It will be recalled that about six months ago—or, to be more exact, on the morning of September 15, 1913—Mrs. Gottschalk, the wife of Dr. Louis Gottschalk, manager and vice-president of the Alembic Process Co., was killed in the company's laboratory, at Sewaren, New Jersey, by the explosion of a steel container in which there was a mixture of chemicals used in synthetic rubber experiments.

Another investigator doing the same sort of research work has met his fate in the same way in the same laboratory.

Dr. Gottschalk, undeterred by the tragic fate of his wife, determined to continue his search for the chemical construction of rubber, and he associated with him his son-in-law, George Titus, and a chemical engineer, Clifford D. Meeker. For several months past they have been engaged in the company's laboratory in their scientific experiments. On March 26, while the three were in the laboratory a retort containing a mixture of chemicals exploded, instantly killing Mr. Meeker and seriously injuring Mr. Titus, who, however, escaped death because at the time he happened to be screened by some steel plates.

Notwithstanding these two tragedies, the two survivors of the last explosion declare that they will continue with their experiments.

CATALOGS OF STANDARD SIZE.

A committee appointed by the Technical Publicity Association, of New York City, has been investigating for the past year and a half the subject of standardizing the size of catalogs, the object being to make this particular form of publicity of the greatest possible value. A file of catalogs carefully arranged is often decidedly valuable to the merchant or his purchasing agent, and uniformity of size would not only assist materially in such an arrangement but would probably lead to the preservation of many catalogs which are now, because of their inconvenient size or form, either misplaced or lost. As a result of its investigations the committee recommends as standards for all catalog purposes sizes 6 x 9 and 8½ x 11 inches, with 8 x 10½ inches for bulletins, and this recommendation has been accepted by the association, a large number of companies now using letter-heads of this size and bulletins being filed with correspondence. The American Society of Mechanical Engineers and the American Institute of Architects have also had committees engaged in similar investigations, each of which recommends the 8½ x 11 inch size for both catalogs and bulletins.

GOLD COAST RUBBER AND WATER.

A BUYER of Gold Coast Rubber in a city some hundreds of miles from New York, recently brought to our attention so interesting a tale of Free water in casks of that sort of rubber that it is well worth attention. The rubber came to New York and was promptly re-shipped to the buyer. Then, according to custom it was sent to the factory, tared and an affidavit being made, the difference was allowed as the amount of rubber received. The story of the manufacturer is related simply to point out the lack of uniform system in nearly all crude rubber transactions and in the hope that the publication of the facts will lead up to a more modern method. He relates his experience as follows:

"When my attention was called to some huge shrinkages in Gold Coast, some of them running over 60 per cent., I found that the man in charge was drawing the water out of the casks without any report, no matter how much of it was present.

"We had more of the same rubber due us, and I took up the question immediately with each of the sellers, insisting that the rubber should be grossed and tared at the same time and same place, the same as Para. Three agreed to my suggestion and the rubber was delivered accordingly. After much difficulty the other seller agreed that the lots that were on the dock ready to be delivered should be weighed in the way specified, but demurred from accepting affidavits on previous deliveries.

"I enclose a list of the weights, without names, of some of the deliveries, because I want to make this absolutely impersonal. As I told you in New York, I visited some of the warehouses in Liverpool and noted in every one of them that there was a hose and a taret.

WEIGHTS OF 10 CASKS OF GOLD COAST LUMPS

CASK NO.	FREE WATER 9 TO 27 POUNDS.				Received Weights			
	Gross	Net	Gross	Net	Gross	Net	Water	Proper Gross
1	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
2	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
3	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
4	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
5	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
6	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
7	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
8	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
9	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
10	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165

WEIGHTS OF 5 CASKS OF GOLD COAST LUMPS

CASK NO.	FREE WATER 22 TO 130 POUNDS.				Received Weights			
	Gross	Net	Gross	Net	Gross	Net	Water	Proper Gross
1	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
2	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
3	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
4	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165
5	1,428	1,165	1,428	1,165	1,428	1,165	263	1,165

"I had an amusing correspondence with this last seller, who insisted that the old method of weighing was correct; that is, that we should gross the casks on the wharf, and then they should allow us for whatever tares we found; so I put this example up to him:

"Supposing that he should ship to us from Liverpool a tight oil barrel in which should be placed one lump of Gold Coast weighing ten pounds, and there should be two hundred pounds of water, how much rubber should I pay for? The only answer he would make was the same old answer—that we should pay for two hundred pounds of water and ten pounds of Gold Coast, and because I kept putting it up to him stronger and stronger, he finally got peevish, and so I dropped the matter. However, I have noticed since that they have credited the water.

"I am emphasizing this because it illustrates so clearly the fact that there is no uniform method, that there are no uniform contracts, that there are no standards of nomenclature, and that each case is settled with an importer by the manufacturer, according to the particular force put into the matter by the manufacturer.

"My belief regarding all of such shipments of Gold Coast Rubber is that every one of the New York people is innocent, that it is purely false packing. It is the Liverpool representatives in these New York houses who do not look after the manufacturers' interests and see to it that false packing of water does not exist. For such neglect they and they alone are responsible. Of course we can only look to the people that sell and deliver rubber, but there certainly should be some regular method of weighing.

"It seems to me that the most primitive safeguards in the contract are not specified, and it is just as much in the interest of the dealer to have these standards recognized as it is for the manufacturer.

"Consider the amount of business that is done between dealers and manufacturers with no uniform contract, no standards of nomenclature, no standards of weighing, no standard of what constitutes delivery within a specified time. The integrity of the industry demands that steps shall be taken to clarify all these dealings."

LEWIS & PEAT'S CHART.

The chart covering the variations in London rubber prices since 1909 is a graphic record of the movements of the market. It is supplemented by the following table of the world's production:

WORLD'S PRODUCTION OF RUBBER, IN TONS.

	Plantation Pará.	Wild Pará.	Other sorts.	Total tons.
1910	8,000	38,250	33,750	80,000
1911	14,000	38,000	33,000	85,000
1912	28,500	42,000	25,500	96,000
1913	47,000	39,500	22,000	108,500

English deliveries of plantation Pará are shown as follows: 1910, 6,094 tons; 1911, 9,650 tons; 1912, 19,373 tons; 1913, 31,260 tons. England has thus absorbed a large proportion of the increased production of plantation Pará.

The chart contains a photograph of a seven-year-old *Hevea* being tapped in Malaya.

RAW PRODUCTS CO.

The usual chart of this company has been received and is full of valuable statistical information, showing the movement of prices during the last three years, as well as the monthly fluctuations in quotations of 32 grades of crude rubber. United States imports and stocks for each month of 1913 are also given, in addition to Pará monthly arrivals and stocks.

English imports are shown as well as stocks, like information being furnished as to Antwerp and Bordeaux. Being prepared for hanging up, this chart will be found useful for frequent reference and consultation.

ESTIMATED PLANTATION RUBBER SUPPLIES FOR 1914.

After a plantation crop of 47,000 tons for 1913 an English estimate places the supply for 1914 at 63,800 tons. But as this is all pure rubber the increase of some 17,000 tons would be the equivalent of about 25,000 tons of wild rubber, which loses from 15 to 40 per cent. in washing.

Supposing that the decline from Africa, Brazil and Mexico will be 15,000 tons in the current year, a net increase of 10,000 is in prospect. Even with a normal increase of 10 per cent. on last year's consumption of about 105,000 tons there would seem a prospect of a shortage. Such is an English view of the situation.

Another American Speaks His Mind About Mexico.

(The following letter on the Mexican situation was written by Mr. Henry Lane Wilson, who spent ten years in that country, traveling extensively and familiarizing himself with all phases of Mexican life.)

EDITOR, THE INDIA RUBBER WORLD:

DEAR SIR: The United States is a big country, but any man may go from Maine to California, or from the Great Lakes to Florida, and find the same kind of people, customs and language; Americans may cross into Canada or Canadians into the United States and hardly perceive a difference in surroundings. But when an American crosses the Rio Grande into Mexico he enters into a new world. The people, their customs and their language are entirely foreign to him; hence the difficulty for an American to understand Mexican people and their conditions. The masses of the Mexican people are a very different race from Americans or Europeans, and their history is such that it would be foolish to judge them by American standards.

Three years ago Mexico was flourishing, peaceful and progressing, the Mexican people were happy and had all the liberty that was consistent with the capacity of the masses of that country to enjoy. The progress, peace and prosperity of the country were due to the strong but wise administration of that peerless "Old Roman," General Don Porfirio Diaz, the greatest Mexican that ever lived, for he did more good for his country than any other man. But in all countries, no matter what the form of government, there are the "ins" and the "outs." The "outs" in Mexico had been out a long time, the old president was virile and alert and kept them in awe, but they abided their time, meanwhile preparing for the coming of the Messiah. He came in the shape of a gilded youth of no achievements, with all the presumption of the self-confident, untried theorist, who mistook his inordinate ambitions for a call to save his country—which country was as much saved at the time as it will ever be.

The "Old Roman" had aged and the eager "outs" concluded that this was a good time to strike. They received the afore-said gilded youth with fraternal arms, and made a straw man of him and launched him as the savior of his country—Don Francisco I. Madero—at the head of the notorious *Ejercito Libertador* (the Army of Liberation).

Diaz saw with the eye of the statesman that an inevitable crisis had reached his people and that the masses had been befuddled. He resigned. They gave up the "Grand Old Man," with all the substantial good that he had brought them, to follow the vain prophet with the alluring promises of land, liberty and plenty. Poor deluded dupes! But some say: "Madero won out; the people must have been with him." My reply is: "A mob was with him, and not even all of the mob, but sufficient to bring down the catastrophe from which Mexico is still suffering."

But you may add: "Madero was finally elected constitutional president." Seemingly yes, but actually no. Madero, through subterfuge and machinations (aided and abetted by his uncle, holding the chair of Finance Minister, and other relatives holding those of War and State) kept his mobs under arms all during the provisional presidency of De La Barra, and when election day came he was forced in the chair through the intimidations of his armed mob at the polls.

Madero was a scourge to his country, because the country had never before been so advanced nor so prosperous and peaceful as at the time he began his revolution. When Generals Felix Diaz and Bernardo Reyes were liberated by the Cadets of Tlalpam, the Republic of Mexico was in chaos. It had been so all through Madero's administration. General anarchy reigned. Mexico City itself, the capital of the Republic, was being assailed.

Things had come to a pass where something drastic had to be done.

Now let us come down to date. General Victoriano Huerta is the man of the hour. Strengthen his hands and the Mexican situation is settled. The "Constitutionalists" cannot hide the spots of their Maderism. It is the same "rule of ruin" party and you can recognize them by their tactics.

Listen further to what James Creelman had to say in the "North American Review" of April, 1911: "Nothing can be more certain than that free election and actual majority rule in the present condition of the Mexican masses would mean ruin and political anarchy. It is a hard thing to say, but it is true. The nearest possible approach to popular self-government consistent with peace and material progress, would be a system in which the right to vote was restricted by educational and property qualifications. Yet it is doubtful whether the ignorant Indians and part Indians would consent to such a change in the national organic law. The main burden of the demand of the insurgents has been that the existing constitution of Mexico shall be honestly and liberally enforced and that at all hazards the government shall be turned over to the majority of the people. The answer is—Mexican history."

General Huerta—some say he is a traitor. He would have been a traitor had he not done what he did do. He owed nothing to Madero—he owed everything to his country. He made the *coup d'état* because his country needed a man, and he shouldered the load.

The death of Madero was a mob accident, purely and simply. It was very deplorable and unfortunate, but still, let us not magnify it over-duly. Look at the hecatomb he caused his country! What is one man's life compared with the ruin of a nation? To those who are familiar with history, the manner of Madero's death should not have caused much surprise. He had aroused the very worst element in the country, liberating criminals from all the prisons he could break open, to help him. He made promises that he well knew he could not fulfil. When in power he was vacillating, weak and unfit for the task.

General Huerta did all that could have been asked of him to protect Madero; he took all the precautions that could reasonably be expected to protect him. But the thing happened. It was fate! General Huerta was the last man in all the world who would have had it happen; anybody who will stop to reflect coolly and without prejudice will understand that.

Now as to Mr. Henry Lane Wilson. To put any blame on him for not saving Madero is not only most unjust but extremely foolish. All he could do was to politely signify that his government hoped no harm might befall the unfortunate, deposed president—which no doubt he did. But no matter what they did with Madero, neither the United States representative nor any other nation's representative, had any right to interfere, simply because Mexico is an independent and sovereign nation and is not bound to take dictation in what regards her interior affairs.

Aurora, Mo.

LOUIS CASTO.

FORWARD PLANTATION BUSINESS FOR 1915

London advices report numerous sales of standard plantation crêpe first latex for delivery early in 1915 at 2s. 5½d. (59.80c.) per pound.

These transactions had recently been the subject of negotiation at a lower price, so that their being carried out represents improved market conditions.

The Editor's Book Table.

CULTURE ET EXPLOITATION DU CAOUTCHOUC AU BRÉSIL.
A propos de la culture du Caoutchouc, de l'agriculture, de l'industrie et du commerce du Brésil, par M. O. Labroy et M. V. Cayla. Published by the Brazilian Bureau of Information in Paris. (Illustrated, large 8vo, 412 pp., 1913.)

WHILE this book which has recently come from the Brazilian Bureau of Information maintained in Paris—covers ground, much of which is already familiar to many readers of THE INDIA RUBBER WORLD, still it is such a comprehensive study of the culture of rubber in the Amazon basin that it seems well worth while reviewing it in considerable detail. It contains the report recently presented

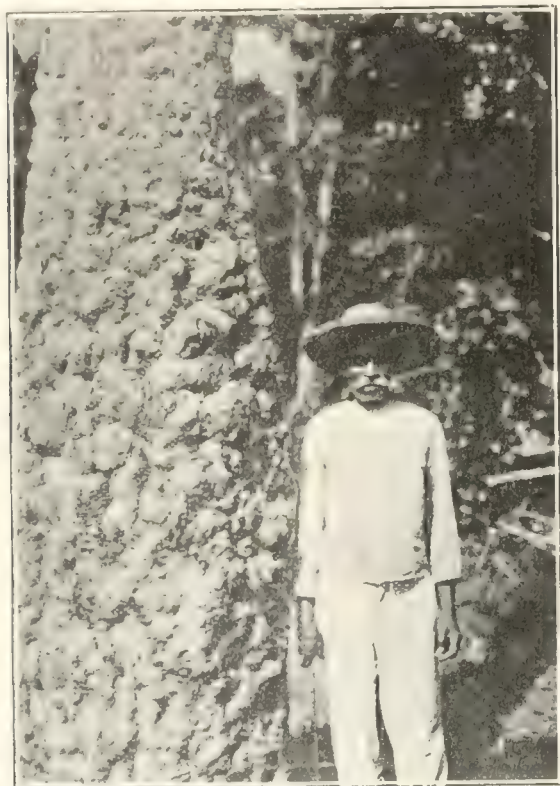
very complete report as to the three rubber-producing trees of chief importance to the production of Brazil—Seringa (*Hevea*), Caucho (*Castilloa*) and Maniçoba. Their personal observations harmonized with those previously made at the same points and in various plantation countries, such as Malaysia, Ceylon, East Africa, etc.

In this work their special object was to define the exact situation of the rubber extracting industry in the valley of the Amazon and to suggest practicable improvements; considering finally the inauguration of cultural enterprises in the localities most suitable for their development.

At the head of the list of coadjutors in their labors stands the name of Dr. R. Pereira da Silva, superintendent of the "Defesa da Borracha" (or Defence of Rubber), the bureau which has taken such a prominent part in the recently proposed reforms.

THE WORLD'S PRODUCTION.

In 1892 the world's rubber production was about 30,000 tons, of which 18,318 tons (61.7 per cent.) came from the region of the Amazon. It increased to about 70,000 tons in 1909, and to 80,000 tons in 1911, but meanwhile the proportions from the various regions have been modified. The rubber of the Asiatic forests has practically disappeared, African quantities but slightly



TRUNK OF FOREST *Hevea*, SHOWING MALFORMATIONS CAUSED BY MANY YEARS' USE OF THE *Machadinha*

to Dr. Pedro de Toledo, late Brazilian Minister of Agriculture. This report had been drawn up by M. O. Labroy, director of the Pará experimental station for rubber cultivation, with the co-operation of M. V. Cayla, agricultural engineer, and was published by the Brazilian Bureau of Information in Paris.

The object of their labors was to study the present conditions of rubber cultivation in the principal centers of Brazilian production; to investigate the agricultural possibilities of those regions, and, finally, to fix upon locations suited for the establishment of two agronomical stations in the *Hevea* and Maniçoba zones.

M. Labroy, in handing the report to the minister, stated that the time at the disposal of himself and his colleague was insufficient to allow of their paying detailed visits to the rubber districts in the vast territories of Northern and Central Brazil, communication with which is slow and difficult. They were in consequence forced to limit their investigations to the zone of the lower and middle Amazon; including the basin of the Xingu as well as the southern and western part of the State of Bahia, as far as the river San Francisco.

Nevertheless they were able to compile an interesting and



Heveas PLANTED BETWEEN BANANA TREES

differing from one year to another; a new competition having, however, appeared in the form of plantation rubber.

During the years 1899-1913 Amazonian production practically doubled (from 21,909 tons to 41,950 tons) and plantation Pará advanced from 670 tons in 1907 to 28,500 tons in 1912. At the end of 1912 Amazonian production represented only 40 per cent. of that of the world, being composed of 77 per cent. *Hevea* and 23 per cent. Caucho. In addition, Brazil produces annually about 2,500 tons of Maniçoba and Mangabeira.

Up to the end of 1912 Brazil kept at the head of rubber producing countries, tho during the last 12 years its share in supplying the market has diminished. The opinion is expressed that the calendar year 1913 would see for the first time a production of plantation rubber exceeding that of Brazilian.

AMAZONIAN PRODUCTION

Owing to its immense resources in wild rubber, the article should long continue to be produced in Amazonia. M. P. Leconte, the engineer, estimates the number of trees at 200,000,000, of which only one-tenth are being tapped. The area of Asiatic *Hevea* plantations is estimated at 1,125,000 acres, containing 150,000,000 trees, of which scarcely 15 per cent. are being worked.



SMALL BOAT FOR TRANSPORTING RUBBER IN THE REGION OF THE FALLS (RIVER NINGU)

The above figures are quoted by M. Labroy in proof of the prospective importance of the Asiatic plantations and as illustrating the dangers they present for the Brazilian extractive industry, if the measures of defense adopted January 5, 1912, are not strictly and vigorously applied.

HEVEA BRASILIENSIS.

The family of the *Hevea* includes 21 species, the geographical area of which extends over the whole valley of the Amazon and part of that of the Upper Orinoco. A small number of species form the source of the *borracha* of Brazil and the *jébe* of Peru and Bolivia. Of the various species, the *Hevea Brasiliensis* predominates over all other known varieties, owing to the superiority of its product and the importance of its yield. It constitutes the type of genuine Pará rubber and rises to the height of 65 feet and more. The botanico-economical study of the Upper Amazon *Hevea* has advanced but little, but this region differs from the Lower Amazon in its climatic features.

The physiology and biology of this species are next dealt with, as well as the tapping; followed by the consideration of the Amazonian methods of coagulation and preparation of the latex.

The commercial designations of rubber and the business methods in use in Brazil are then discussed, with *proforma* statements of expenses borne by shipments of Amazonian rubber. There is an excessive amount of handling of this rubber from the smoke house to the steamer.

BRAZILIAN PLANTATIONS.

Future cultural enterprises with *Heveas* in the valley of the Amazon should (according to M. Labroy) be inspired by the experience gained on the estates of the Middle East; keeping in view the modifications necessitated by local conditions. Mistakes committed in Malaya can be avoided in Brazil. The basin of the Amazon has ample space for establishing *Hevea* plantations, but the author suggests restricting them at first to locations favored by the nature of the soil and by facilities of trans-

portation. Distant points on the Upper Amazon are now less in favor for such enterprises than the islands, the banks of that river as far as the Rio Negro, as well as those of other rivers. The *Hevea* develops vigorously on the islands of the Amazon estuary, but the climate at that spot is said to be unhealthy. As a fact sanitation has been greatly improved by the clearing and cultivation of the soil, while the mortality among the rubber gatherers largely arises from bad food and excessive drinking.

Succeeding chapters deal with the clearing and laying out of a plantation; multiplication, planting, tapping, methods of coagulation, etc. Further subjects treated are: yield of plantation *Hevea*, pests, and economical considerations as to *Hevea* cultivation and transportation.

EXPERIMENTAL STATIONS

It is remarked that the good will of Amazonian planters will be stimulated by the Federal decrees of January 5 and April 17, 1912.

By these decrees the Federal government engages:

1. To create an experimental station in the environs of Pará.
2. To instal a rubber purifying plant.
3. To establish a factory of rubber goods.
- 4, 5. To build different lines of railway.
6. To organize a zoo-technical post on the island of Marajo.
7. To establish a fishing industry.
8. To erect an asylum capable of receiving 1,500 immigrants.
- 9, 10. To instal three hospitals, each for 100 sick patients, at different points in the State.
11. To maintain two coal depots.

On its part the State engages:

1. To gradually reduce by 10 per cent. the rubber export tax within a term of 5 years; equaling 2 per cent. per annum, commencing from January 1, 1914.
2. To exempt plantation rubber from all tax during 25 years from January 5, 1912.
3. To establish a fixed tax of 400 reis per kilo (6 cents per pound) on rubbers containing more than 6 per cent. of impurities.
4. To exempt from all taxes for 25 years certain agricultural enterprises.
5. To diminish, under agreement with the Federal government, and in the proportion of 40 per cent., the freight tariffs of the navigation companies administered or subsidized by the State of Pará.

MANICÓBA.

Five species of wild Manicoba are described, with their biology and climatic peculiarities. Under the head of "Cultivated Manicoba," full details are given for the guidance of intending planters. The work contains over 100 artistic illustrations, some of which are reproduced.

CASTILLOA AND MANGABEIRA

The botany of *Castilloa* is dealt with, as well as its cultivation and tapping. It is remarked that the regions with the climatic conditions most favorable to the Amazonian species are just those which have the least facilities of transportation.

Some trials have been made of cultivating Mangabeira, notably in the State of Sao Paulo. These trials have established the fact that this species grows too slowly for the establishment of commercial plantations. In this opinion M. Labroy concurs in his final remarks.

KALENDER FÜR DIE GUMMIINDUSTRIE UND VERWANDTE BETRIEBE (Calendar for the Rubber Industry and Kindred Branches). Issued by Dr. Kurt Gottlob. Berlin, 1914. Union Deutsche Verlagsgesellschaft. 146th, 683 3/4, 280 pages, with supplement of 208 pages.

With each recurring year, the above-named calendar makes its appearance, its completeness of detail rendering it specially useful to all interested in calculations affecting rubber. A number of tabular pages give space for recording purchases of rubber, losses in washing, details of vulcanization

and other points of importance; while the standard tables showing equivalents in German currency of English prices per pound at various rates of loss in washing, form a valuable basis of calculation. Further tables include estimates of production, consumption and visible stocks for the years ending June 30, 1906 to 1913.

A group of tables records the sources and characteristics of South and Central American, African, Asiatic and Oceanic varieties of rubber, while another series gives the variations in rubber prices from October, 1912, to September, 1913.

The subjects of manufacture and products are next dealt with, in the form of tables showing the chemical composition of various ingredients used in rubber compounds, the comparison of German and English vulcanization scales, logarithms and other mathematical calculations. An interesting feature of this section is the normal price list of rubber hose in various internal diameters and thicknesses.

Other interesting tables with reference to the commerce in rubber and rubber goods enhance the completeness of the work. The supplement includes an historical calendar of the rubber industry from A.D. 1536 to 1910, as well as a review of the chemistry and technology of rubber. It also contains a good deal of varied technical information, which renders the calendar of interest and value to rubber manufacturers in general.

COCONUT CULTIVATION AND PLANTATION MACHINERY.
By H. L. Gilchrist, C. S. S. and J. L. G. and J. W. Hurdley,
London, 1913. Pp. 150. Price 1s. 6d. (London, 1913. Cassell & Co., Ltd., 4, Bedford Square, W. C. 1. 144 pages.)

In this handy little volume there is grouped a quantity of information gathered and compiled by its authors, whose experience has given them special facilities for the task.

According to an outline of the various requirements of humanity which the coconut palm fills, the roots furnish a remedy for fevers; the trunk wood for building purposes; the stalk firewood; the husk coir for cordage and paper pulp; the shell drinking vessels and rubber latex cups; while the kernel (commercially known as copra) gives oil, cattle feed, nut butter, soap, food and candles. Finally, the milk forms a delicious beverage. The authors state that nothing else that grows on earth has so many uses as this wonderful tree, for which Malaya, the successful rubber country, is also an ideal land. Europeans have not given this particular cultivation the same attention that has been devoted to rubber and coffee, the coconut industry having remained almost entirely in the hands of the natives or the Chinese; the total area under that form of cultivation being about 150,000 acres. Latest annual exports of Malayan coconut products equal in American currency approximately: Coconuts, \$150,000; coconut oil, \$1,100,000; copra, \$10,000,000; total about \$11,260,000. There are said to be large tracts of land suitable for coconuts in Malaya awaiting the advent of enterprising capitalists. It is added that the industry is only in its infancy and is bound to expand on the introduction of more enlightened methods for the preparation of the copra and the extraction of the oil.

In subsequent chapters the details of cultivation are dealt with, while in a later section the machinery and plant for coconut factories are fully described, with illustrations, plans and estimates. Catch-crops receive mention in connection with Robusta Coffee and other intermediate forms of cultivation. It is, however, remarked that rubber trees should on no account be interplanted with coconuts, as they cannot possibly thrive well together.

To all interested in the subject of coconuts, this comprehensive summary will prove of value.

RUBBER SHARE HANDBOOK 1914.

THE 1914 issue of this useful handbook is full of valuable information about the 589 plantation companies represented in England. This number is apparently smaller than that shown in April, 1913, for the previous two years, but this arises from the elimination of the "Dollar and Rupee" companies and of the Rubber Trust companies, which make the correct amounts for 1912 561, and for 1913 580. In comparison with these figures the total for 1914 of 589 shows a slight advance on last year, principally due to the addition of new companies in Malaya, more or less offset by some falling off in respect to Africa. Nearly two-thirds of the plantation companies thus belong to the Malay States and Ceylon.

STERLING PLANTATION COMPANIES (ELIMINATING RUBBER TRUST COMPANIES AND "DOLLAR AND RUPEE" COMPANIES)

	1912.	1913.	1914.
Malay States.....	*223	*237	251
Ceylon	*101	*109	113
Java	43	44	47
Sumatra	39	40	37
Borneo, etc.	28	27	29
India	34	37	34
Oceania	4	4	4
Africa	52	49	43
South and Central America, Mexico, etc..	37	33	31
Total	561	580	589

* Revised figures.

In the preface to the work, Mr. E. L. Killick refers to the figures of production now available, as follows:

	Plantation.	Brazil.	Rest.	Total.
1912	tons 28,518	42,410	28,000	98,928
1913	" 47,200	39,370	19,100	105,670
1914 (estimated). "	65,000	32,000	10,000	107,000

Receipts from Brazil, he adds, during the past few months indicate a serious falling off, so that it is reasonable to conclude that the Brazilian industry is feeling the pinch of low prices and will do so to an increased extent.

The opinion is expressed that it will not be long before African and other wild rubbers will become quite unsalable at remunerative prices, seeing the steady increase of plantation imports. That the requirements of the automobile industry are in excess of supplies is proved by the lack of adequate stocks.

With regard to plantation rubber, Mr. Killick emphasizes the advantage of the low cost of production, adding that there is no reason to doubt it will ere long reach a total cost of about 1s. (24.33c.) per pound, while wild rubber can never be produced on such favorable terms. Costs will probably not vary much throughout the plantation zone, it being apparently reasonable to accept 1s. as the ultimate cost of production, with 400 pounds per acre as average annual yield at maturity.

One advantage of plantation rubber is that when the market is unfavorable production can be held up and the rubber left untapped awaiting an improvement. In Mr. Killick's own words:

"As there is strong evidence of general agreement among big buyers of rubber, the necessity of a protective combination of sellers is obvious. . . . The inference is that no real desire for combination exists among producers. The market will apparently be left to take its own course, with consequences eventually damaging to the entire industry, and disastrous to individual companies of insufficient financial strength."

EXPORTS OF RUBBER MANUFACTURES TO PHILIPPINES

Statistics for October show the following exports from the United States to the Philippines of manufactures of rubber during the month in various years: 1908, \$5,596; 1912, \$16,218; 1913, \$40,036.

NEW TRADE PUBLICATIONS.

NATIONAL INSULATED WIRE AND CABLES

THE National India Rubber Co., of Bristol, Rhode Island, with its chief sales office at 30 Church street, New York, has just favored the trade with a beautifully printed catalog 6 x 9 inches in size with 224 pages and stiff cardboard covers. In reproducing the insulated wires and cables made by the company the printer has permitted himself to use as many colors as the articles require. As a result, he has probably used, all told, including various bronzes, eight or ten different printings to accomplish the desired effect. This is rather an expensive way of producing a catalog, but it is exceedingly effective, as it shows the goods precisely as they are.

In addition to a great number of illustrations of goods there are a number of interesting pictures of factory interiors.

One is reproduced here, showing a room containing a great number of high speed braiding machines. Three interesting full page photographic reproductions in the front of the book show the gathering of the latex in the Amazon forests, its coagulation over the smoke of palm nuts and two enormous biscuits of Pará rubber standing outside of the National mill, one biscuit weighing 1,210

pounds and the other 1,465 pounds. It is hardly necessary to add that Pará rubber is not normally shipped to this country in biscuits of this size.

ANTAEUS WATERPROOF CLOTHING.

The trade in that industry has received a special illustrated catalog of "Antaeus" waterproof clothing made by the North British Rubber Co., Ltd., of Edinburgh. The ladies' models include the "Raglan" and the "Kitty," while those for gentlemen comprise the Chesterfield and another model of Raglan.

The suitability of the "Antaeus" garments for withstanding tropical weather is shown by a letter from a customer in the West Indies, who has worn a coat of that brand for nearly five years in that trying climate. His previous experience had been that a raincoat lasted less than a year.

Among the specialties listed are fishing jackets and motorcycle garments. Scales for self-measurement for ladies' and gentlemen's garments form a useful feature of the catalog.

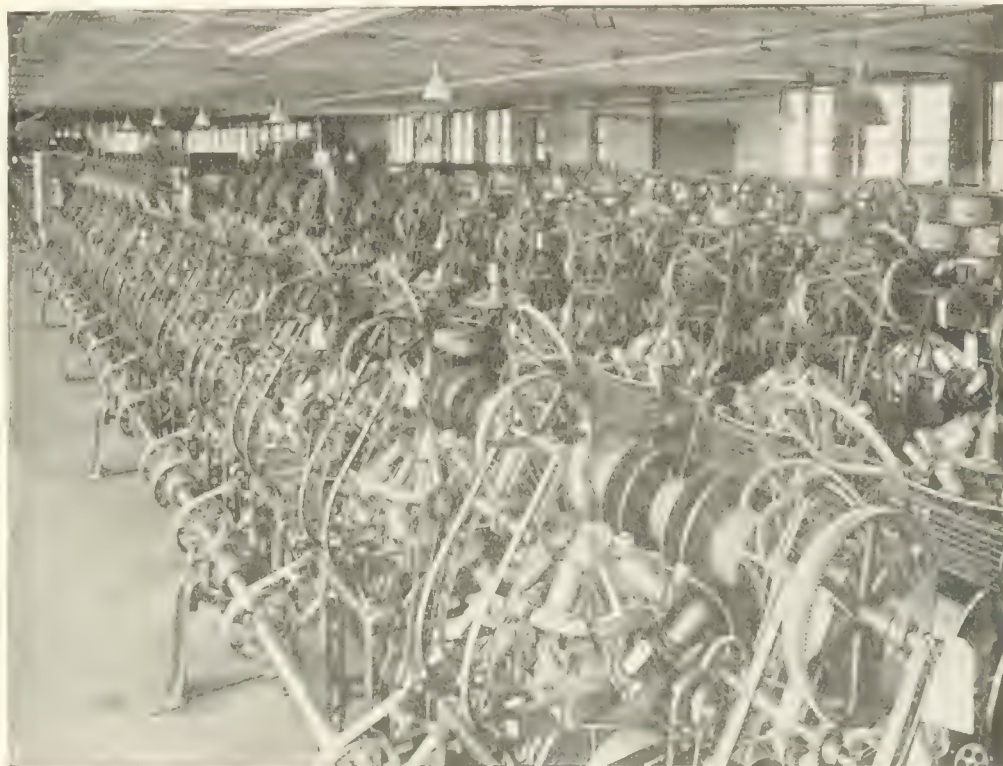
Another special catalog is that of the waterproof fabrics made by this concern, including patent calendered and upholstering cloths, as well as a full range of materials in a great variety of designs and qualities.

A FINE EXAMPLE OF BELTING AND PACKING LITERATURE

The New York Belting & Packing Co., whose main offices and warerooms are at 91 Chambers street, New York, has also issued a particularly handsome catalog. It is a book about 6 x 9 inches in size with 230 pages, bound with stiff cloth covers. It is printed in two colors, a steel black and buff, colors which lend themselves to very attractive combinations. In the front of the book there are several pages devoted to fine two-color halftone reproductions of the company's big plant at Passaic, New Jersey, the interior of the New York store and interior views of the Philadelphia, Pittsburgh, St. Louis, Chicago and other stores. The volume is generously illustrated, showing not only a vast variety of belting, packing, hose and tubing, but giving fine full-page interior factory views of the departments where the various articles described in the text are produced.

There are two particularly effective halftone illustrations in the

back part of the book—one showing an office of the United States Rubber Co., the other showing one of the Lackawanna ferry boats—in both of which the floors are covered with this company's interlocking tiling, the illustrations being printed in a sufficient number of colors to represent the thing as it appears on



HIGH SPEED BRAIDING MACHINES

the floor. The halftone illustrations are made from photographs subsequently touched up by the artist to bring out details which the camera was incapable of fully producing. The catalog reflects much credit on Mr. Roberts, who looks after the company's literature.

THE HUB-MARK BOOK FOR SALESMEN

The Hub-Mark Rubber Co., of 174 Congress street, Boston, has prepared a little book entitled "Hub-Mark Common Sense" for general distribution among the salesmen of that well advertised brand. It is of convenient pocket size, so that the salesman can carry it with him and peruse it on the train or at other odd moments. It gives a short description of the way in which Hub-Mark goods are made and prepared for the market, showing the great care which is taken with every detail. The book concludes with a three-page reprint of an article by Herbert Kaufman, which recently appeared in some of the daily papers on "The Practical Value of Civility"—an article which is full of good advice for everybody who has anything to sell.

Send for index to "Crude Rubber and Compounding Ingredients."

FULTON SPECIALTIES

While larger business operations call for the use of metal type, there is a wide field for the use of rubber type, for the purpose of rapidly making attractive window signs, shelf labels and other announcements. Completeness of assortment is essential to the perfection of such a system, and that this has been attained in the product of the Fulton Rubber Type Co., of Elizabeth, New Jersey, is shown by two interesting catalogs, Nos. 27 and 28, recently issued by that company. The former includes the Fulton line of sign and price markers, while the latter deals with business printing outfits with movable rubber type, as well as with stamp pads and other accessories.

At the factory from 15 to 20 tons of rubber type pass every year through the vulcanizing department, every manufacturing operation, from the crude rubber to the finished product, being carried out on the premises.

As showing the perfection attained by this enterprising concern in one branch of the rubber industry, these catalogs are both interesting and instructive.

THE SIMPLEX MANUAL.

In a neat booklet the Simplex Wire & Cable Co., Boston, has published a new edition of its "Simplex Manual," containing tables of dimensions and weights of its solid copper wire and other products. Prices are likewise given for "Simcore" cables and wires, "Simplex" caoutchouc (B. C.) wires and twin wires. For the purpose of facilitating calculations, a useful table is annexed of freight additions for various sizes of wire to the different states. To any one desirous of making rapid and accurate calculations of this company's products, this little work will prove an invaluable handbook.

A PAMPHLET ON THE INDUSTRIAL TRUCK.

On a recent occasion, Mr. W. W. White, of the General Vehicle Co., Inc., Long Island City, read a paper before the Electric Vehicle Association of America on "The Industrial Truck as a Factor in the Efficient Handling of Internal Freight." He remarked that the word "Industrial" was rather a classification than a type, there being many special applications of the freight truck. Each class has its special fitness for certain kinds of work, the freight truck proper being very elastic in its range of services.

Long before the days of the motor truck it was evident that something was wrong with the horse system of trucking, but the extent of its inefficiency was not apparent until the motor truck gave a standard of comparison applicable in connection with horse traction.

Other subjects touched on by Mr. White are: freight congestion and its remedy, and analysis of time lost at docks and platforms.

Various effective illustrations supplement the text and show the General Vehicle Co.'s models, which are already used in 32 cities at home and abroad. Thirty-seven carriers and firms are now using 208 of the company's 2,000-pound type. One textile plant in New England is using twelve of these machines for carrying rolls of print cloth and dye tubs from the storehouse to the printing machines.

SEVERN TIRE COVERS.

In a tasteful catalog the Severn Rubber Co., Limited, of Meteor Works, Birmingham, England, has graphically illustrated its various forms of tires, tire covers and other products. The covers include the standard grades, "Severn," "Meteor," "Record," "Clarion," "Burbury" and "Mascot." Special heavy covers are shown in the "Meteor" and other qualities.

The lines of automobile accessories are very complete, including brake blocks, "Severn" solution, patching rubber, valve tabs, tire paint, tire gaiters, acetylene gas tubing, etc. The arrangement of the catalog is remarkably clear and explicit, and it is sure to be of use to dealers in the range of products represented.

THE GOODRICH.

In No. 5, the cheerful and inspiring magazine "The Goodrich," published by the B. F. Goodrich Co., Akron, casts a ray of sunlight on the tire trade by a selection of breezy anecdotes, with in most cases the moral "to use the Goodrich tire." Being described as a "Southern number," it is appropriate for the illustrations to depict scenes in the "Sunny South," with which the "Goodrich" is more or less directly associated. The more distinctly local views include "Along the Levees at New Orleans," "Atlanta—A Real Live City," "Goodrich New Orleans Store," and "Auto Shop at Van Alstyne, Texas." A selection of "Slides for the Movies" shows how dealers in various parts of the country are utilizing this modern form of advertising to promote the sale of Goodrich tires.

DERBY CALENDAR FOR MARCH.

The March calendar of the Derby Rubber Co., of Derby, Connecticut, has a picture in colors entitled "Close Quarters," showing a hunter scaling the narrow edges of a precipitous cliff while a big brown bear is hot in pursuit. At the moment the artist depicts the scene the hunter is evidently cornered and has turned on his pursuer with his revolver. The logical suggestion of this picture is that within a few minutes only one of these two figures will remain, but whether it will be the hunter or the bear is left to the imagination.

A NEW FIRESTONE HANGER.

A hanging card 18 x 30 inches in size, and in colors, designed to direct the attention of automobile owners to emergency tire repairs and illustrating and describing six of these articles, is being distributed by the Firestone Tire & Rubber Co. to dealers and garages. Cure-Cut, Cementless Patches, Inside Blow-Out Patches and Tire-Save Patches, as well as Lace-on and Hook-on Boots are included in the accessories mentioned, and the occasions on which each may be appropriately and profitably employed in emergency repairs is suggested.

THE PORTAGE RUBBER CO.'S "RUBBER TIRES."

In its booklet entitled "Rubber Tires" the Portage Rubber Co., of Akron, describes three constructions by which pneumatic tires are made, viz., Full-molded, Single-cure wrapped tread and Double-cure wrapped tread, going into details of construction and illustrating the "Daisy" and other treads. This booklet contains also advice on the care of tires, with tables of inflation and carrying capacity and of interchangeable tire sizes.

"RUBBER."

The February issue of "Rubber," published by the Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut, is an interesting one, and should be especially so to dealers in footwear, as it calls attention to displays supplied by the company to assist the dealer in the sale of rubber goods. Particular emphasis is given to the patented heel construction employed in this footwear, and to the new Plaza heel rubber for women—both of which are illustrated. Attention is called to the extent of the service the company is able to offer dealers, a service extending "From Pilgrim's Rock to the Golden Gate." This number also contains an obituary, with portrait, of the late George A. Lewis, for many years president of the company.

A RUBBER FISH FOR TROLLING.

This is an artificial cuttle fish made of soft rubber to be used in trolling. The body is hollow and filled with absorbent cotton, to be saturated with a fish oil pleasing to the taste of the particular fish you are after. The oil slowly leaks out through openings provided and adds an agreeable smell to the attractive appearance of the lure.



THE RUBBER TRADE IN AKRON.

B. On Ke nian Correspondent.

THE Rubber Trading Co., of 38 Murray street, New York, crude rubber brokers, has opened a branch office at 603 Flatiron building, Akron, which is under the personal supervision of Robert T. Baird. Mr. Baird is not a new man in Akron, having at one time been connected with the rubber business in this city for several years. His many friends here are glad to see him return to Akron.

At the meeting of stockholders of the B. F. Goodrich Co., held in New York City March 11, the following directors were re-elected for three years: F. A. Hardy, E. C. Shaw, C. B. Raymond, H. E. Raymond and David M. Goodrich. This was followed by a meeting of directors, when the officers of the past year were also re-elected.

A. H. Marks, of this company, is in Florida in the hope of regaining his health. Mr. Marks was operated on about a year ago at Johns Hopkins, and has not yet fully recovered.

W. O. Rutherford, recently elected assistant sales manager of the Goodrich company, was formerly manager of the Denver branch. Then for a period of ten years he was head of the Buffalo branch, and during the last four years he has been at the Akron factory. Perhaps his most conspicuous talent is that of organization. His associates all testify that there are few so capable of enthusing a selling organization and keeping it at a productive white heat.

Alexander Adamson, of The Adamson Machine Co., Akron, will attend the International Rubber Exposition to be held in London in June.

* * *

W. S. Campbell, formerly with "The Iron Trade Review and Daily Iron Trade," is now advertising manager for The Miller Rubber Co.

The degree of care exercised in the production of tires is fully explained in recent literature sent out by the Firestone Tire & Rubber Co. Starting with the tire fabric and following all the way to the completed casing, every component of the tire is subjected to the most exhaustive tests and every operation to the closest scrutiny. The fabric is unrolled over electric lights—slowly, so that the inspector may detect any flaws—after which it is subjected to pulling tests. The rubber in manufacture receives equally close care and attention, and in the work of building up the tire every individual process is supervised by inspectors, each operation requiring the O. K. of the inspector before the next is begun; so that when the completed tire has passed final scrutiny it is almost certain to be entirely free from flaws.

The sales manager of this company, R. J. Firestone, in his campaign of education in the interest of the automobiling public, is emphatic in his endorsement of the doctrine that tire chains are useless on any car except when deep snow or mud is encountered. That non-skid tires, scientifically made, tested and proved—such, for instance, as are produced in the Firestone factory—afford much greater surety against skidding, either sideways or forward, is the claim advanced; and he further calls attention to the wear and tear on tires equipped with chains as a result of grinding back and forth, stating that he has often seen a practically new tire with the tread almost torn from the carcass from the use of a chain.

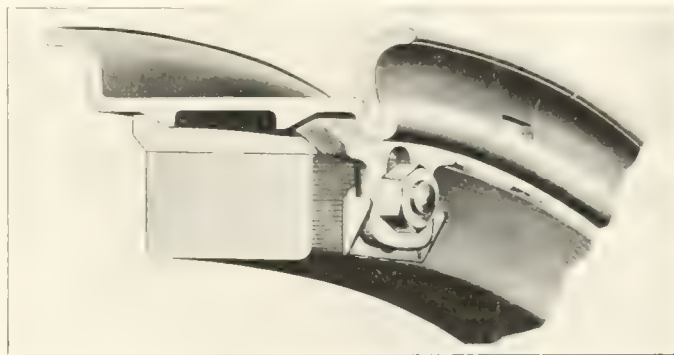
The Firestone Tire & Rubber Co. for the past two years has been developing a motorcycle tire to add to its automobile tire line. These are made in four popular sizes: 28 x 2½, 28 x 2¾,

29 x 2¾, and 28 x 3, finished in either corrugated or regular Firestone non-skid tread. The company is also making red tubes and gray tubes to fit all sizes.

At the special meeting of stockholders of the Goodyear Tire & Rubber Co., held March 3, the plan proposed by the directors for the introduction of new working capital was approved, and holders of common shares immediately subscribed for the majority of the new \$4,000,000 stock offering. Comparison of tire sales for the first three months of 1913 and 1914 show very gratifying gains, and officials of the company express the belief that business for the entire year will be materially increased. The productive capacity of the plant—which early in February was increased by about 1,000 tires per day, reaching a total approximating 6,000—has since that time been still further increased, a letter emanating from the office of the company's president containing the statement that on March 5 more than 8,300 pneumatic tires were made. The company expects during 1914 to make and sell 190,000 motorcycle tires, sales of which for the years 1911-12-13 aggregated 250,000 tires.

The Goodyear company endorses the suggestion of the Society of Automobile Engineers in regard to limiting the solid tire sizes for motor trucks and motor fire apparatus to diameters of 36 and 40 inches, stating that such action would lead to more uniform production and quicker and more satisfactory filling of orders, while the necessary engineering changes for car manufacturers would be but slight.

A new rim has recently been placed on the market by the



GOODYEAR NO-RIM-CUT DETACHABLE DEMOUNTABLE RIM.

Goodyear company, for use with all standard types of tires other than the clincher variety. This rim permits the tires to widen out at the base and rest in natural position, providing greater air space and insuring the side walls against excessive strain through having the beads pinched together. The flanges are also of sufficient height and of suitable contour to give proper support to the tire. This rim is claimed by the company to be the lightest rim on the market supplied in demountable form. It is simple in operation and the outside flange answers the purpose of a combination side ring and locking ring. The accompanying illustration shows this rim in the No-Rim-Cut Detachable style.

* * *

A contract has been awarded by the Kelly-Springfield Tire Co. for a \$15,000 office building to be erected in this city at Kelly and Second streets.

* * *

W. B. Miller, formerly secretary of The Diamond Rubber Co., has associated with himself several men prominent in the rubber industry in Akron in his new rubber factory located at South Norwalk, Connecticut. The names of these men will be given in a later issue.

* * *

H. A. Price, formerly manager of the Atlanta branch of The B. F. Goodrich Co., assumes management of the Cleveland

branch; and Mr. Murphy, assistant manager at the Philadelphia branch, goes to Atlanta to succeed Mr. Price.

* * *

W. E. Slabaugh has been appointed trustee in bankruptcy of the Akron Rubber Mold & Machine Co.

The McNall Auto Tire Co., of Toledo, Ohio, organized by several Akron men, will engage in a general tire business.

Buchtel College, which within the past six months has become the University of Akron, is emphasizing technical and engineering lines, and especially those connected with the rubber industry; and no doubt the change from its former ownership to that of the city will give it increased prestige, larger resources and insure its future. Free tuition is granted by the city, and it is kept up at the city's expense. It was opened in 1872. The endowment and college buildings are valued at \$300,000, free from debt, and all were turned over to the city upon the condition that the university should be maintained as a municipal institution. There are six acres in the campus, with an athletic field of four acres. Thus Akron is one of the few cities in the country where a college education can be secured by its residents free.

Akron's growth during the last two years necessitates the erection of six large school buildings the coming summer.

THE RUBBER TRADE IN BOSTON.

By J. F. Moore, President of the Rubber Reclaimers' Club.

BUSINESS has not changed materially, one way or the other, during the month. Weather influences are blamed for the tardiness of spring activity. While Boston and New England have not suffered so severely from the lingering winter, still there has been enough in the climatic conditions to give fairly plausible excuse for a somewhat prolonged continuance of the conservatism which has characterized nearly all trades for the past few months, and the rubber trades have, to a considerable extent, followed the fashion.

The notable exceptions are the clothing and footwear lines, which naturally have benefited by the many and severe storms at the fag-end of the season. Clothing men report a brisk demand for raincoats and rubber garments, this demand being noted for all qualities from the finest down to the very cheapest. Perhaps the business in cheap garments is stimulated by the various transient stores devoted to "fire sales" or "removal sales," which are seldom absent from this or other large cities.

Naturally the rubber footwear trade has been lively, and stocks in retailers' hands have been greatly reduced, and in many cases entirely depleted, because of the snow storms and the thaws following. The rubber heel manufacturers all seem to be busy, and their number does not grow less. Many of them have added to their lines the manufacture of rubber soles for shoe manufacturers. The fashion which started last year, of leather or canvas shoes with stitched-on rubber soles, will continue this coming summer at least, and the makers of rubber soles have secured much extra business because of this demand. Competition has been and continues keen, and shoe manufacturers have been able to buy "rubber" soles at most any price they were willing to pay. So many poor quality soles were put on shoes last year, however, that some shoe manufacturers discontinued the making of these lines. This has discouraged the making of too low a quality of soles, and most of those produced today are of a better grade.

Reports of the tire manufacturers are somewhat conflicting. Some seem quite well satisfied, reporting business excellent, while others state that business is dull, and not enough is doing to warrant running their factories to full capacity. Possibly as many tires are being made and sold as in a corresponding period of previous years; perhaps more, but the trade is evidently unevenly divided.

The Automobile Show last month was well attended, and some good business resulted for the manufacturers of motors and cars. As per the agreement made previously, few tire manufacturers exhibited, but it was noticed that the Automobile Show Program, a handsome book of 128 pages, contained advertisements of many of the leading tire agencies, calling special attention to their Boston locations, and inviting visitors to the fair to call upon them and examine their lines in a more leisurely manner than would be possible at the exhibition hall.

* * *

Among the surprises in automobile tire circles was the announcement about the middle of last month that Howard Limric had resigned as local manager of the B. F. Goodrich Co. in this city, and had become manager for New England of the Kelly-Springfield Tire Co. Mr. Limric has been with the first mentioned company many years, coming here from Akron fourteen years ago as assistant manager of the tire department, then located at 24 Kingston street, where three or four men constituted the sales force. Later, when larger quarters were established on Columbus avenue, he was made manager, and as the business grew the new large building on Boylston street was erected, planned and furnished under his direction, the business having increased twenty to thirty fold under his management.

He now becomes New England manager for the Kelly-Springfield Tire Co., with local offices and salesrooms on Boylston street, near Exeter street, in the very heart of the automobile district. Mr. Limric has made a host of business and social friends in the fourteen years he has been here, and they all wish him the same marked success in his new position which he enjoyed with the Goodrich company.

Mr. Limric's retirement has resulted in the advancement to the New England managership of the Goodrich company of J. F. Moore, who has been with the company many years, and was Mr. Limric's "right hand man" and understudy. It is safe to predict that the business of the company in New England will be continued much on the same lines as heretofore, with only such changes as would naturally come from the difference in the personalities of Mr. Moore and his predecessor. Like Mr. Limric, he is a hustler for business, knows his company and its goods, has the confidence of his superiors at the home office, and the good will of the hundred or more employees at the Boylston street store.

The clerks and salesmen of the Revere Rubber Co., Chelsea, held a most enjoyable reunion and banquet at the Boston City Club early last month, at which nearly 100 were present. Among those who addressed the assembly on subjects pertinent to the occasion, and appropriate to the business interests of the diners, were C. W. Townsend, Samuel Walker, Frank B. Dickson, Arthur M. Hope and Howard Irwin.

* * *

President Robert C. Harlow and Treasurer J. H. Stedman, of the Monatiquot Rubber Works Co., of South Braintree, with their wives, sailed Saturday, the 14th, for Bermuda, where they will spend a few weeks.

William F. Mayo, the head of the big rubber shoe concern bearing his name, with his wife, is touring the western country. They were in southern California during the excessive rains of a month ago, and had somewhat strenuous experiences. The train they were on was the last to cross one of the bridges later carried away by the flooded river. The tourists are now proceeding on the return trip in a leisurely manner, making stops at several of the more important sightseeing points.

* * *

Captain F. H. Appleton, president of the Rubber Reclaimers' Club, shared with the Honorable Curtis Guild, ex-governor of Massachusetts, and former ambassador to Russia, the honor of

being a guest and speaker at the first annual banquet of the National Association of Waste Material Dealers, held at the Hotel Astor in New York on the 17th ult. Both gentlemen made eloquent speeches, which were heartily applauded.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

RPAIR work has started in a number of the western elevators, and Chicago belting firms are receiving an increasing number of orders by every mail. Extensive paper mill building is promised for this spring in the northern part of Michigan and the belting people are confident that they are going to have an excellent season. Packing is now in good demand among the coal mines of the middle west, which have started spring equipment work earlier than usual this year.

Fire Marshal C. F. Seyferlich has announced that the Manhattan Rubber Mfg. Co., 61 West Lake street, was the lowest bidder in a competition by a number of local rubber houses for 70,000 feet of rubber fire hose. The Electric Hose & Rubber Co. was the lowest bidder for 5,000 feet of chemical hose. John H. Merrel, assistant manager of the Manhattan company, said that its order would be filled with "Economy" brand of underwriters' labeled cotton rubber lined fire hose, with the double jacket. The competition is thought to have been rather keen for the contract this year. Last year H. Channon & Co. were the successful bidders.

In addition to the two contracts mentioned a contract was given at the same time for a number of solid rubber tires, the Firestone Tire & Rubber Co. securing this award.

The P. A. Salisbury-Schulz Co., one of the largest manufacturers of rubber stamps in the city, has recently added a retail stationery department. P. A. Salisbury is one of the oldest rubber men in the city and has been in business at the same location for the past 35 years. The new addition to the store does not mean that the company will in any manner cease to emphasize the rubber end of the business, but merely that advantage is being taken of an opportunity which exists because of no stationery store being located in the immediate vicinity.

This is a photograph of a ten ply rubber composition belt



ENORMOUS RUBBER COMPOSITION BELT.

made by Salisbury & Co. for the Universal Portland Cement Co.—length, 1,250 feet; width, 36 inches; weight, 9,132 pounds.

Ten weeks were required for manufacture in the company's large factory at Buffalo, New York, and it was found necessary to remove the door frame of the shipping room before it could be loaded upon a flat car and cleated for transportation. The belt will be used in the plant of the cement company at Buffington, Indiana, near Chicago, to convey hot cement from the grinders to the refining department.

This firm manufactures rubber belts of all kinds, and pays particular attention to grain elevators. Repair work is going on now in the giant elevators of the west and in southern Canada and a large number of orders has been received from the managers of these great enterprises. W. H. Salisbury & Co. make a special study of the problems which confront these managers in installing belts. One of the greatest troubles is to get them to buy a belt with a heavy enough ply, their inclination being to purchase a belt which is just strong enough to do the work, rather than one which can do the work and still have left a surplus of strength.

D. H. Cassel, formerly of the Ruboid Belting Co.'s sales force, has joined the selling staff of the Boston Belting Co., and will travel in Wisconsin, Indiana, Michigan and Illinois.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE frequency of wet and stormy weather during January, February and early March materially stimulated the rubber business, especially among such concerns as operate footwear departments. The resultant reduction in stock has furnished work for the employees, and it will be a couple of months before lines are fully replenished. Those factories making automobile goods are finding an increasing trade, which, however, is not as great as for the corresponding time a year ago.

A decree was entered in the United States District Court for Rhode Island about the middle of the month by Judge Arthur L. Brown, holding that the American Locomotive Co. does not infringe on the patent of the Dual Tired Wheel Co. This is one of the first cases to be decided in Rhode Island under the new law allowing patent cases to be tried in the Federal District Court.

The Dual Tired Wheel Co. interests are patentees and makers of a wheel whereon are mounted two parallel rubber tires with a central metal tread between them, intended to act as the tread of the wheel when a heavy load is being carried. These wheels are designed to run on tracks, but may be used on roads where there are no tracks if it is so desired. The American Locomotive Co. got out a wheel which had mounted two parallel rubber tires separated by a small piece of metal about three-quarters of an inch in diameter. The contention was that a tire of this description was an infringement of the patent granted the plaintiff, but the defendant locomotive company claimed that in the design of this tire it was not intended to use the metal strip as a tread. Judge Brown, in his opinion, states that the metal strip used by the American Locomotive Co. is too small to be used as a tread and that the wheel was not designed to run on tracks. He holds that the patent granted to the wheel company has not been infringed. On several other allegations Judge Brown finds it unnecessary to give an opinion.

* * *

C. H. Oakley, of the Essex Rubber Co., lost on March 9 a pair of tires valued at \$70, these having been stolen from the rear of his car.

* * *

The severe rain storm that swept over this State early in the month caused considerable damage by reason of swollen streams. For the first time in its history, the Alice mill of the Woon-

socket Rubber Co., at Woonsocket, was forced to shut down on the 3rd inst. because of the height of the water in the Blackstone river. The afternoon before, the water ran over the dam at the mill at a depth of three feet above normal, or seven inches higher than it had been for many years. The water flooded the basement of the main building and leaked into the engine room, covering parts of the flywheels and putting the engine out of business. A force of men was at once employed, the water was lowered and repairs made so that the mill was able to resume operations the following day.

An addition, 60 x 80 feet, of steel faced with brick, has just been made to the Alice Mill and is to be utilized for a machine and carpenter shop and for the completion of any special work.

Business at the National India Rubber Co. at Bristol has taken a decided boom in the last month, and one of the largest shoe tickets for a long time is the result. A new slipper called "The Tango," of very neat design, is being made, with cloth tops and rubber soles to prevent the wearer from slipping or sliding while dancing. The company is receiving numerous large orders for these goods. The wire insulating department is on short time at present as it is the dulllest period of the year in this line. The plant is running on five and eight hour schedule alternating days.

Two large metal cupolas were blown off the roof of the storage room at this company's plant during a severe storm early in March.

Harry H. Shepard, former manager of the National company's factory, is reported to be seriously ill at his home at Bristol. His right leg was amputated about the first of March.

The International Rubber Co.'s factory at West Barrington is being operated four nights a week until 9 o'clock to keep up with the orders that have been accumulating for several weeks for carriage cloth, a product that is made of a sort of twill, coated with rubber, and used in the manufacture of carriages. Evening work is expected to be necessary for several weeks to come.

Pending negotiations regarding the ownership and control of the Consumer's Rubber Co., of Bristol, the factory is being operated on orders, large quantities of tennis and rubber shoes being turned out daily.

Just before noon on Thursday, March 19, at the office of this company, the superintendent, Terrance McCarthy, was presented with a large basket of azaleas and carnations from the employes of the factory, the occasion being the anniversary of his birth.

Samuel M. Nicholson, of this city, who was elected a director of the United States Rubber Co. at the recent annual meeting of the stockholders at New Brunswick, New Jersey, is president and general manager of the Nicholson File Co. and president of the American Screw Co., as well as a director of the Union Trust Co., the Industrial Trust Co. and the Rhode Island Safety Deposit Co.—all of Providence.

The Revere Rubber Co. is operating its plant on Valley street, Providence, on a full time basis, which includes a night and day force. This plan is to be kept in operation, according to a recent statement from that concern, for an indefinite period. The company desired, it is said, to turn out 1,000 automobile tires per day, and in order to do this it was necessary to greatly increase the working force. According to a statement from the management, the concern has orders for about 60,000 tires for outside sales, and to this can be added a large amount of stock that will have to be produced to replenish the branch storehouses of the corporation. It is said that the prospects for steady work on the present basis are very promising.

THE RUBBER TRADE IN TRENTON.

By our Regular Correspondent.

A BILL was introduced in the Assembly on March 4 which if passed will limit the number of working hours which shall constitute a week's work in any factory or work shop in the state of New Jersey to 50 instead of 55 as heretofore. This bill also provides what these hours shall be, viz., from 7 a. m. until noon and from 1 p. m. until 5 p. m.—with the exception of Saturdays.

The state of New Jersey has become prominent in the production of automobiles and in kindred lines of manufacture, and the city of Trenton has materially aided in bringing about this enviable prominence. The total population of the state, according to the census report of 1910, was 2,537,167, and statistics show that in the state 40,000 men are employed in the automobile and kindred trades, in addition to about 7,000 garage employes and 14,000 chauffeurs. There are in the state more than a dozen tire manufacturing concerns, six of which—the Acme, Ajax-Grieb, Empire, Home, Thermoid and United & Globe—are located in Trenton, while the Michelin company is near-by, at Milltown. Jersey City is the home of the Carspring tire; the Braender and Rutherford companies are located in Rutherford, the Mattson at Lodi, the Hardman at Belleville, near Newark, the Combination Manufacturing Co., tire manufacturers, at Bloomfield, and the Howe Rubber Co. at New Brunswick. The roads of the state are always in excellent condition, more than \$500,000 being spent annually in up-keep and improvements. During 1913 there were 49,588 automobiles registered in the state, 8,419 motorcycles and 1,772 trucks of 4,000 pounds and over; while the car license fees collected by the state amounted to \$442,244, and the fees for drivers' licenses to \$144,418.

The manufacture of machinery required in the production of tires, etc., is also well established in Trenton, and a local motion picture theatre has been featuring a set of films showing the making of automobile tires by the DeLaski and Thropp method, a process originating in Trenton and now in use by six of the leading Trenton tire concerns, as well as by 29 other tire manufacturers in this and other countries, patents having been issued in the United States, Canada and all foreign countries. The pictures showed the entire process of tire manufacture, from the crude rubber to the finished product.

Clifford W. Lee, who had been in the employ of the John E. Thropp's Sons Co. for the past twenty years, lately occupying the position of head bookkeeper, died at his home, 230 Jackson street, this city, on March 5, in the thirty-eighth year of his age. He was a member of the Second Presbyterian Church, of the Trenton Lodge F. & A. M. and of Trenton Council O. U. A. M. He is survived by his wife and three children.

The superintendents and foremen of the plant of the John A. Roebbling's Sons Co. at Roebbling, recently held their sixth annual banquet at the Roebbling Inn. The entertainment was furnished by the Roebbling orchestra, assisted by three colored cabaret singers, and Judge Rees officiated as toastmaster.

The Howard Demountable Rim Co. is now making a special offer to Ford car owners, fitting this popular priced machine with Trenton-made rims at prices which have proved equally popular.

The Michelin Tire Co., at Milltown, is evidencing much interest in the formation of an athletic association among its employes, the object of which shall be to promote interest in all kinds of athletic sports. It is understood that a tract of ground has been purchased by the company for the purpose of conversion into an athletic field, and that grandstand, bleachers, etc.,

are to be erected from which to view baseball, tennis, soccer and other games as indulged in by the Michelin employees. The Michelin baseball team, which last season won the championship of the New Brunswick Factory League, is to be backed again this season by the company.

THE RUBBER TRADE ON THE PACIFIC COAST.

By our Regular Correspondent

A MAP of Central California is now being distributed by the Fisk Rubber Co., of Chicopee Falls, Massachusetts, either on request to the home office or through its branches. This is a most comprehensive road map, showing besides, in colors, the mountain and valley districts of the section, and calling attention to many points of interest—and it gives the motorist a fine conception of the country through which he may travel.

The new building of the Fisk company at Tenth and Hope streets, Los Angeles, was completed, with up-to-date fixtures and special machinery for the repair and service departments, early in March, and this branch of the company's business, under the management of C. O. DuMars, is now well established in new and appropriate quarters.

* * *

The Hendrie Rubber Co., of Torrance, has closed a deal with the McElroy Bennett Co., of Los Angeles, by which the latter company is to purchase during 1914 \$100,000 worth of Hendrie tires, acting as Los Angeles agents for the sale of this company's product.

The display made by the Hendrie company at the automobile show recently held at Salt Lake City, Utah, was one of unusual interest among many interesting exhibits. It included a small rubber tree from South America and a quantity of crude rubber and visitors to the booth were shown each step in the manufacture of rubber tires. The exhibit stimulated interest in and sale of the Hendrie tire, which is distributed locally through a branch store at 210 South West Temple street, managed by R. F. Orlob.

* * *

The Universal Tire Co., of Los Angeles, has purchased at a cost of \$35,000 property in the city of Anaheim, California, which is to be used for a tire manufacturing plant. This property consists of eight acres of land just south of the town, together with a large brick structure known as the old Dryfus Winery building, used as a storehouse for the past twenty-five years but which is a landmark of the early wine industry of the district. The deal for this property was negotiated by the president of the Universal company, H. H. Holdaway, and by the secretary, Irving Y. Biglow, who state that an initial equipment of machinery to the value of \$75,000 will be installed immediately, that the company expects to have the plant in operation by June 1 and that within a few months the force of operatives will probably number from 200 to 500. This is one of the largest commercial enterprises that has ever located in Orange county, and the property covered by the purchase is especially suited to the purpose of such an industry.

* * *

The building mentioned in the February number of THE INDIA RUBBER WORLD as being under construction for the San Francisco branch of the Federal Rubber Manufacturing Co., has been completed, and this branch is now located in quarters as attractive and commodious as are enjoyed by any such concern in the west. The building is two stories high, situated at Van Ness avenue near Sutter street, and is of reinforced concrete. The offices and salesrooms are on the street floor, the second floor being devoted to storage of tires, which are carried on steel racks and shelves, an innovation in this part of the country. This branch, of which E. L. Rittig is the manager, was established a year ago.

C. E. Mathewson, who for the past ten years has had charge of the Diamond tire business of the west, with headquarters in San Francisco, has severed his connection with that company, his resignation taking effect on March 21, so that he might take a steamer for Japan which sailed on that date. Mr. Mathewson has been one of the most prominent men in the industry here, and while declining to go into details regarding his plans for the future, he states that on his return from a trip around the world—which will occupy several months, and on which he is accompanied by his wife—he expects to go into business for himself.

* * *

The automobile tire dealers of Fresno, California—who number about twenty—are forming an association, the purposes of which are: To protect the interests of all dealers; to prevent price cutting and granting of discounts, and to increase business and service efficiency.

W. B. Guyton, agent in southern California for the Swinchart Tire & Rubber Co., of Akron, with offices at 1013 South Main street, Los Angeles, visited the factory of the company early in March. Altho connected with the company for some time, this is the first visit he had made to the plant, and his enthusiasm has been considerably increased as a result of the investigations and observations he made there.

* * *

The Pacific Tire & Supply Co. has been incorporated in the state of Washington, with a capital of \$700,000, of which \$200,000 has been paid in in cash, to manufacture tires for pleasure cars and trucks as well as rubber belting. The plant is to be located at Seattle and at the start will probably have a capacity of about fifty tires a day. The head of the new concern is B. L. Gates, prominent in the financing of several important Seattle concerns, who is said to be at present engaged in negotiations for machinery and skilled tire makers to take charge of various departments.

The Chanslor & Lyon Co., of Seattle, Washington—agents in the Pacific Northwest for Lee tires—has recently appointed A. M. Peterson manager of its tire department. Mr. Peterson will have under his supervision the trade of Washington and Idaho. He is well acquainted with the trade of that section, having been previously identified with several of the other large Seattle tire concerns.

It is understood that the Firestone Tire & Rubber Co., of Akron, is soon to commence the erection of a permanent home for its Seattle branch, now operating under the management of Ed. Champion.

* * *

Announcement is made of the opening by the United States Rubber Co. of California of a branch store at 1055 Second street, San Diego. L. A. Hilton is manager of the new branch, which carries complete stock of automobile, bicycle and motorcycle tires, as well as automobile sundries.

H. A. Farr, manager of the Seattle branch of this company, in speaking of the service which the "Nobby Tread" tire gives its users, mentions a letter received by him from the Smythe Auto Service Co., of Eureka, California, operating stages between that city and Fort Seward and Longville, connecting with the Northwestern Pacific railroad. In this letter the statement is made that experiments in securing tires for use on cars traveling over some of the worst roads in the state have led to the conclusion that the "Nobby Tread," because of its reliability in every-day use, is the logical tire for rough mountain work.

The seventeenth annual meeting of the American Society for Testing Materials—now comprising 1,649 members, or 75 more than the membership of a year ago—will be held from June 30 to July 4 of this year at Atlantic City, New Jersey, with headquarters at the Hotel Traymore.

RUBBER CONSUMPTION PER HEAD OF POPULATION.

IN the annexed table the geographical consumption of rubber is shown for the years 1912 and 1913. The consumption per head of population is also given. From this table, compiled by the "World's Rubber Position," it will be seen that the United States and Canada lead with a consumption equaling 1.06 pounds per head, while England comes second with .88 pound. It is of interest to note the increase of about 20 per cent. in the English figure, while the American rate has slightly receded in 1913 as compared with 1912.

THE CAPACITY OF CONSUMPTION OF RUBBER DURING 1912 AND 1913, AND THE CONSUMPTION PER HEAD OF POPULATION.

	1912	Per head	1913	Per head
United States and Canada	47,500	.48	47,200	.44
Germany, Austria, etc....	16,000	16.2	16,600	15.8
Great Britain	14,500	14.7	18,000	17.2
France	10,000	10.1	9,000	8.6
Russia	9,000	9	11,500	10.9
Italy, etc.	1,000	1	1,370	1.2
Japan and Australia.....	1,000	1	2,000	1
Total	99,000		105,670	

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta percha for the month of December, 1913, and for the first eleven months of five calendar years, beginning January 1:

MONTHS	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
December, 1913....	\$159,118	\$83,599	\$617,787	\$860,504
January-November..	2,327,725	1,207,130	7,659,060	11,193,915
Total, 1913.....	\$2,486,843	\$1,290,729	\$8,276,847	\$12,054,419
Total, 1912.....	2,529,843	1,358,222	7,883,786	11,771,851
Total, 1911.....	2,276,511	1,686,092	7,140,140	11,102,743
Total, 1910.....	2,056,944	2,266,137	5,681,486	10,004,567
Total, 1909.....	1,800,300	1,653,466	4,413,626	7,867,392

The above heading, "All Other Rubber," for the month of December, 1913, and for the first eleven months of three calendar years, beginning January 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
December, 1913.....	\$295,474	\$50,009	\$345,483
January-November	3,615,214	548,596	4,163,810
Total, 1913.....	\$3,910,688	\$598,605	\$4,509,293
Total, 1912.....	3,222,133	608,530	3,830,663
Total, 1911.....	2,458,177	561,330	3,019,507

EFFECTS OF LOWER DUTIES ON RUBBER GOODS IMPORTATIONS.

A comparison of the United States imports of manufactures of rubber for the last three months of 1912 and 1913 shows the following results:

	1912.	1913.
October	\$74,165	\$122,417
November	104,671	94,167
December	73,295	128,735
Total	\$252,131	\$345,319

The above figures illustrate the effect of the new tariff which went into effect on October 3, 1913.

THE UNITED STATES RUBBER ANNUAL MEETING.

THE annual meeting of the United States Rubber Co. was held in New Brunswick, New Jersey, on March 17. President Samuel P. Colt submitted his report—which is given in full on another page. There were two vacancies in the Board of Directors to be filled—one caused by the death of J. Howard Ford, and the other by the resignation of E. C. Benedict, who is retiring from his various business interests because of advancing years. Only one new director was elected, as it was decided that the board should consist of twenty instead of twenty-one directors. The new director is Colonel Samuel M. Nicholson, of Providence, president of the Nicholson File Co. and interested in various other business enterprises in that city. The Board of Directors for the coming year is as follows: Walter S. Ballou, James C. Brady, Nicholas F. Brady, Samuel P. Colt, Harry C. Converse, James Deshler, James B. Ford, Frank S. Hastings, Francis L. Hine, Henry L. Hotchkiss, Arthur L. Kelley, Lester Leland, D. Lorne McGibbon, Samuel M. Nicholson, Raymond B. Price, Homer E. Sawyer, William H. Truesdale, Theodore N. Vail, John D. Vermeule and Elisha S. Williams.

At the meeting of the new Board of Directors, on March 23, the following officers were elected for the ensuing year: Samuel P. Colt, president; James B. Ford, vice-president; Lester Leland, vice-president; Elisha S. Williams, vice-president in charge of tire and mechanical department; Homer E. Sawyer, vice-president in charge of footwear department; Raymond B. Price, vice-president in charge of development department; W. G. Parsons, treasurer; Samuel Norris, secretary; E. J. Hathorne, assistant treasurer; John D. Carberry, assistant secretary.

It will be noticed from the above list that the number of vice-presidents has been increased from two to five.

RUBBER GOODS FOR FLOODS.

In the spring of the year many localities in this country are liable to floods. One has only to think back a year to recall the harrowing scenes that occurred along the Ohio, where the overwhelming overflow from the river caused so much damage to property, not to mention sacrifice of human lives.

A writer in a German rubber paper recently discoursed at some length on the subject of inundations and the precautions that should be taken by rubber dealers in localities frequently, or even occasionally, visited by floods to be prepared for the emergency. His observations, and especially his advice, being applicable here quite as much as on the Continent, may be worth repeating in condensed form.

Floods, the writer observed, may be sudden and unexpected in their nature or they may be periodical events to be looked for with the melting of the snow in particular districts. In either case the reports usually indicate how unprepared for such dangers were those whose lives and property were at stake. Life-saving appliances are often lacking in such cases—losses of human life, of animals and of valuable property resulting.

The rubber industry manufactures a number of appliances for the saving of both life and property. Attention has been called in Germany to portable folding rubber boats always ready for use. Life-saving bags, swimming belts and other similar articles should always be at hand in such localities as are specially exposed to the risk of inundation, and it behooves every manufacturer, dealer and retailer to recognize this fact and to be guided by it.

In case the articles are not generally known in the districts affected it is high time to bring them to the notice of the local trade. Among other appliances are oxygen apparatus for the attempted resuscitation of those who have been immersed in water, by inducing artificial respiration. These should always be kept in working order. A material service would be rendered by the rubber trade devoting attention to this subject, particularly in connection with those districts liable to periodical floods.

The Report of the United States Rubber Co.

THE report issued by Colonel S. P. Colt, president of the United States Rubber Co., date of March 17, 1914, cannot correctly be called an annual report, as for the most part it covers the nine months between April 1 and December 31, 1913, inclusive, the company's fiscal year having been changed to the calendar year so that the statements of the main company and its subsidiaries might conform.

While an exact comparison cannot be made between this report and former reports, which cover the full year, it is possible to make a sufficient comparison to show that the company has had a very successful season, its net sales for nine months coming within about \$4,000,000 of the sales for the preceding twelve months. The treasurer's report shows cash on hand as nearly \$10,000,000, as compared with \$7,500,000 at the end of last March; and during the nine months covered the value of the plants and properties of the company increased from \$105,000,000 to \$118,000,000, through the inclusion of the Canadian plant and the Sumatra plantation. The report in full is given below:

TO THE STOCKHOLDERS OF THE UNITED STATES RUBBER CO.

At the last annual meeting of the stockholders, the by-laws of the company were amended so as to fix the third Tuesday in March as the date for the annual meeting and to make the fiscal year of the company and of all subsidiary companies to conform to the calendar year ending December 31, in order that there might be given to our stockholders a consolidated statement relieved from the complication of variations in fiscal years.

This year's financial statement which for the first time is such a consolidated statement of the United States Rubber Co. with all of its subsidiaries, covers the period of nine months from April 1 to December 31, 1913, with the additional three months' operations from January 1 to March 31, 1913, in the case of certain subsidiaries whose fiscal year had previously ended on December 31. Hereafter the report will cover the operations of all companies for an identical calendar year and thus simplify comparison.

The treasurer's report, appended hereto, gives the consolidated general balance sheet of the United States Rubber Co. and all its subsidiary companies as of December 31, 1913, and the consolidated income statement of the United States Rubber Co. and all its subsidiary companies for the nine months period from April 1 to December 31, 1913, including three additional months of certain subsidiaries.

Through the adoption of one uniform fiscal year for the United States Rubber Co. and all of its subsidiaries and through a single consolidated statement from which are eliminated all inter-company debits and credits, our stockholders may easily obtain a clear and concise understanding of the combined assets and liabilities of the company and the result of its operations.

It is the desire and intent of the management to give to the stockholders the fullest possible information concerning the business of the company, not only annually, but, in due course, semi-annually and ultimately by quarterly reports.

FINANCIAL POSITION OF THE COMPANY.

As will be seen by the asset and liability report, the company's financial position is strong, the cash on hand being approximately ten million dollars. Eliminating from the current liabilities those which in the regular course of business would always be outstanding, namely, merchandise accounts payable neither due nor subject to discount for prepayment, acceptances given in connection with the importation of crude rubber and accrued interest, taxes, etc., amounting together to \$6,101,379.87, the cash on hand is about fifty per cent. of the remaining current liabilities.

PLANTS AND PROPERTIES

The increase from about \$105,000,000 last year to about \$118,000,000 this year of plants, properties, etc., is occasioned by the inclusion of the Canadian plants and the Sumatra rubber plantations, with the enlargement of the Morgan & Wright tire plant at Detroit and some minor construction.

As heretofore stated, it has not been the custom of our company to make specific charges for depreciation of properties, but on the other hand our many plants are maintained in the highest state of efficiency—all repairs and replacements being charged to expense account.

VOLUME OF BUSINESS

The year 1913 was a year of declining prices. Consequently

the same quantity of manufactured goods would represent a less amount in dollars and cents. The volume of business of the company as a whole was somewhat larger for the nine months of 1913 than for the corresponding period of 1912. Through our "United States Tire Co." there was a substantial increase in tire sales. There was some falling off in volume of sales of footwear, due to the mild weather and lack of snow prior to December 31, but some increase in the sales of mechanical goods, both in quantity and value. Attention might be called to the fact that what was lacking in "rubber weather" early in the winter has been fully supplied by the snowstorms of February and March. The benefit therefrom will appear in the report for the coming year.

PROFITS

For the period named, the net profit before deduction of interest charges was \$9,677,532.81, after deduction of interest charges \$7,140,125.01. The dividends declared during the period on the preferred stock and the common stock of the United States Rubber Co. and minority stock of subsidiaries were \$5,328,856.50, leaving for the period a surplus of \$1,811,268.51. Of this surplus it is estimated that \$764,656.93 was earned in the first three months of the year 1913 by subsidiaries whose fiscal year formerly ended December 31. This being deducted leaves \$1,046,611.58 as representing the surplus earnings for nine months from April 1 to December 31, 1913, over dividends declared for the same period. Considering the sharp reduction in the prices of tires, the absence of snow during November and December, a general declining market for both crude rubber and manufactured goods, and business conditions throughout the country—this statement of earnings may be considered gratifying.

CAPITALIZATION.

The common stock of the company is the same as on March 31, 1913. Under the plan of conversion into first preferred stock, the second preferred stock has been reduced \$358,400 and there is now outstanding but \$622,800 of second preferred stock. Under the offering made to our stockholders in November last \$1,741,000 was added to the first preferred stock and \$39,800 was added from time to time in exchange for Rubber Goods preferred stock.

UNIFICATION OF COMPANIES

As indicated by the financial statements, whereby the assets, liabilities and operations of all our companies are brought into a single statement, it is the policy of the company to unify all of its operations, and to this end steps have been taken to connect the name "United States Rubber Co." with the subsidiary companies, so that there may be no doubt that the United States Rubber Co. is the responsible head and that its name shall indicate the integrity of its merchandise and evidence the highest business principles.

Our plants are maintained at the best standard of working capacity. By earnest co-operation in the application of industry, research and scientific principles, we are steadily developing a higher degree of efficiency and successfully solving the many complex problems inherent in our business. Our development department is assisting in perfecting the quality of our production and the standardization of our plants, equipment and methods. The growing cheapness of crude rubber is opening new and promising fields of investigation and exploitation. The crude rubber from our plantations in Sumatra, of which so far we have received samples, will be arriving in some quantity before the end of this year; and, as more trees come into bearing and all increase in age, the quantity will rapidly increase from year to year. Under normal business conditions, these facts constitute a most promising outlook for the future of our company.

CONCLUSION.

Your president desires again to express his appreciation of the continued fidelity and ability shown by the officers, heads of departments and employees of the company and its subsidiaries. With our profit sharing plan in force and other efforts put forth by our board of directors and executive committee to further the interests of all in the service of the company, the loyalty, devotion and co-operation of all employees were never greater than today.

During the year we have lost by death two of the most useful and prominent members of the board—Mr. Frederick M. Shepard, a director from the organization of the company and at one time its president, and Mr. Anthony N. Brady, who,

both as director and a member of the executive committee, was most active and helpful in promoting the business of the company for the past ten years. These vacancies upon the board were filled by the election of Mr. Brady's two sons, Mr. Nicholas F. Brady and Mr. James C. Brady.

We also most deeply regret to announce the sudden death on March 2 of Mr. J. Howard Ford, who was closely identified with the various interests of our company, and who served it most conscientiously as a director from the time of its incorporation. Respectfully submitted,

SAMUEL P. COLT, President.

TREASURER'S REPORT.

UNITED STATES RUBBER CO. AND SUBSIDIARY COMPANIES.

ASSETS.

Property, plants and investments, including rubber plantations..	\$118,882,026.92	
Inventories, manufactured goods and material	\$36,343,324.28	
Cash	9,990,158.91	
Notes and loans receivable.....	1,676,469.34	
Accounts receivable	22,926,827.53	
Securities, including stock of U. S. Rubber Co. held by subsidiary companies	6,584,180.77	
Sinking fund cash in hands of trustees	422,541.35	
Miscellaneous	2,213,242.41	80,156,744.59
Total assets		\$199,038,771.51

LIABILITIES.

Capital stock, first preferred.....	\$59,330,900.00	
Capital stock, second preferred.....	622,800.00	
Capital stock, common.....	36,000,000.00	\$95,953,700.00
Minority Rubber Goods Mfg. Co. stock, preferred \$1,556,300.00, common \$60,000.00, subsidiary of Rubber Goods Co., \$37,500.00	1,653,800.00	
Minority Canadian Consolidated Rubber Co., Ltd., stock, preferred \$285,880.00, common, \$219,420.00, subsidiary of Canadian Co. \$9,200.....	514,500.00	2,168,300.00
Ten-Year 6% Collateral Trust Sinking Fund Gold Bonds, U. S. R. Co.....		17,500,000.00
Ten-Year 4½% debentures, General Rubber Co.....	9,000,000.00	
Ten-Year 5% debentures, Eureka Fire Hose Mfg. Co.	970,000.00	
Forty-Year 6% Collateral Trust Gold Bonds, Canadian Consolidated Rubber Co., Ltd.	\$2,590,800.00	
Less owned by subsidiary co.....	203,000.00	2,387,800.00
Mechanical Rubber Co. and N. Y. Belting & Packing Co. Bonds	953,000.00	13,310,800.00
Notes and loans payable.....		19,905,837.00
Acceptances for importations of crude rubber	2,275,430.63	
Merchandise accounts payable...	3,274,340.44	
Accrued interest, taxes, etc.....	551,608.80	6,101,379.87
Reserve for dividends	1,736,040.00	
Reserve for redemption of bonds.	382,295.77	
Insurance fund reserve.....	619,570.49	
Employers' accident fund.....	150,463.53	2,888,369.79
Reserve for depreciation.....		7,000,000.00
Fixed surpluses (subsidiary companies)		15,080,880.78
Surplus		19,129,504.07
Total liabilities		\$199,038,771.51

CONSOLIDATED INCOME STATEMENT FOR NINE MONTHS* ENDING DEC. 31, 1913.

Net sales, footwear, tires, mechanical and misc..	\$87,349,692.30	
DEDUCT:		
Cost of manufacture, selling, general expenses and taxes	76,662,081.90	
Operating profits	\$10,687,610.40	
Other income, (net).....	97,141.69	
Total income	\$10,784,752.09	
LESS:		
Cash discount allowed customers for prepayment (net).....	\$624,241.14	
Deductions for bad debts.....	311,875.31	
Federal income tax 1913.....	171,102.83	1,107,219.28
Net income prior to interest charges.		\$9,677,532.81
Interest on funded and floating debt.		2,537,407.80
Net profits		\$7,140,125.01
Dividends—United States Rubber Co.	\$5,138,092.00	
Dividends to minority stockholders R. G. M. Co. and subsidiary Co.'s and Canadian Consolidated Rubber Co. and subsidiary Co.	190,764.50	5,328,856.50
**Surplus for period		\$1,811,268.51
Additions to surplus capital gain on conversion of second preferred into first preferred stock	89,600.00	
Surpluses of subsidiary companies not heretofore consolidated and adjustment due to change of fiscal year to close December 31st (net).....	492,898.76	582,498.76
		\$2,393,767.27
Surplus, beginning of period.....		16,735,736.80
Surplus, December 31, 1913.....		\$19,129,504.07

Respectfully submitted,

W. G. PARSONS, Treasurer.

*Certain subsidiaries twelve months.

**Of this surplus \$10,939.98 is applicable to minority stock interests.

COMBINATION OF ASBESTOS COMPANIES.

The Mid-West Asbestos Co., formed February 24 at Denver, Colorado, with a capital stock of \$8,000,000, has taken over the interests of four other large concerns, viz.: The International Asbestos Mills & Power Co. (capital \$5,000,000); the Northwestern Asbestos Mills Co. (capital \$5,000,000); the North American Asbestos Co. (capital \$10,000,000), and the Wyoming Consolidated Asbestos Co. (capital \$5,000,000). The area controlled by the combined companies comprises 2,260 acres of what is said to be the richest asbestos land in the world and to be the best field of its kind in the United States. It is located in Natrona county, Wyoming. Some of the properties have been worked for several years and are now shipping to eastern manufacturers, but much more extensive operations are contemplated, including the erection of a plant at Denver, new factories in Kansas City and on the Pacific Coast, besides aerial trams and railroad construction. The officers of the new company are: W. E. Bates, president; Louie F. Spratlen, first vice-president; H. P. Waterman, second vice-president, and C. H. Poole, secretary—all of Denver.

Raw asbestos to the value of \$61,216 was exported from British South Africa during the first nine months of 1913. Exports of this mineral for the same period of 1912 reached a value of \$68,141.

Asbestos exports from the island of Cyprus started in 1906 with 43,000 pounds, increased to 1,000,000 pounds in 1910, and to 1,750,000 pounds in 1912.

POEL AND ARNOLD'S JUDGMENT AFFIRMED ON APPEAL.

IN the suit brought in 1911 by Messrs. Poel and Arnold, the New York crude rubber importers, against the Brunswick-Balke-Collender Co., of Muskegon, manufacturers of billiard tables, the judgment in favor of plaintiffs has been affirmed with costs by the Appellate Division of the Supreme Court.

The action was to recover damages for the breach of an executory contract for the purchase of about twelve tons of Upriver Fine Para rubber, the principal questions litigated on the trial and appeal being whether the plaintiffs had established a contract valid within the statute of frauds, the authority of defendant's agent to make the contract and concerning the measure of damages.

A Mr. Kelly represented the plaintiffs' firm in selling rubber, his negotiations having been with a Mr. Rogers, the purchasing agent of the defendants, with an office at their Long Island City factory. Prior to the transaction in litigation, Rogers had negotiated seven purchases of rubber by the defendants from the plaintiffs' firm through the said Kelly, between November 24, 1909, and March 31, 1910.

On April 2, 1910, Rogers made an offer of \$2.42 per pound for 12 tons, deliverable from January to June, 1911, in equal monthly shipments. This offer was acknowledged same day and was accepted by plaintiffs' contract of the 4th, being further confirmed by defendants' order sheet of the 6th. In the opinion of the court the parties then considered the transaction closed, their minds having met on the terms of the contract. In the seven prior sales of rubber, plaintiffs had forwarded to the defendants contracts in the same form as in this case. The rubber embraced in these seven contracts was delivered to the defendants and paid for by them.

On January 7, 1911, the defendants wrote a letter to the plaintiffs, which, in the opinion of the court, supplied any omission in the previous evidence. This letter, among other points, stated that the defendants had no knowledge of Rogers' action as to effecting the transaction in litigation, until his voluntary statement within the preceding few weeks, adding that they would not recognize this or any transactions entered into with Rogers without their knowledge or authority. This letter clearly recognizes that a transaction had been *effected*, while the defendants merely disclaimed Rogers' authority to *effect* same.

In further support of the authority of Rogers to make this contract in litigation, Mr. Arnold, one of the plaintiffs, testified that prior to any of the purchases Mr. Troescher, secretary and treasurer of the defendant company, had informed him "that Mr. Rogers did the buying for the company." Kelly testified as to a like statement made to him. It was also proved that Rogers had made four contracts for fourteen tons of rubber with the New York Commercial Co. for the defendants, all of which had been received and paid for by them. The court expressed the opinion that it was too late for the defendant to be heard to question Rogers' authority to make the contract in litigation.

About two tons of rubber arrived at New York on January 24, 1911, but the defendants refused to accept it. It was then sold on January 26 at the market price of \$1.27 per pound. The plaintiffs elected to regard the defendants' letter of January 7, 1911, and the rejection of the delivery, as constituting a total breach of the contract and on February 1, 1911, commenced this suit.

In each of the five months succeeding January, tenders were made to the defendants of the rubber specified in the contract, and in each instance advice given of sale, the defendants being notified the first month that plaintiffs would hold them liable for all damage of any kind caused by their breach of contract.

The concluding words of the court's decision are:

"We find no error to the substantial prejudice of the defendants. It follows that the judgment should be affirmed with costs."

ACTION OF ACID MINE WATER ON INSULATION OF ELECTRIC CONDUCTORS.

IN mining work it often happens that an electric conductor is exposed to the action of moist air and acid water. While all conductors used in mines are not insulated, some are; this course being necessary whenever multiple-conductor cables are used. The Bureau of Mines has been investigating the action of acid water on the various materials used for insulation, this task having been performed by H. H. Clark and L. C. Hsley, whose preliminary report has been published.

The report deals under various heads with the selection and application of the acid water, the dimensions of conductors, the materials tested, the testing equipment and the results of the tests.

Seeing the difficulty of obtaining uniform samples of mine water (owing to changes effected by rainfall and other causes), it was decided to use two artificial solutions, both to contain sulphuric acid in equal amounts, but only one to contain iron sulphate. Solution No. 1 contained 262.35 grains per gallon of free sulphuric acid. Solution No. 2, in addition to the same amount of acid, contained 699.6 grains per gallon of ferrous sulphate. It was hoped thus to define the action of the sulphate. The insulation was to be sprinkled with the solution, time being allowed for evaporation between each application; while the conductors tested would contain the smallest amount of material consistent with satisfactory results.

Four kinds of insulating material were tested—Thirty per cent. Para rubber, standard varnished cambric, special varnished cambric, lead-sheathed paper. The dates of measurement were nineteen in number, between December 30, 1910, and January 14, 1913. The temperature of the water was 24 degs. C. and the insulation resistances were as below:

INSULATION RESISTANCE IN MEGOHMS.

	Rubber.		Standard Cambric.		Special Cambric.		Lead-sheathed Paper.	
	Jan. 1	Jan. 2	Jan. 1	Jan. 2	Jan. 1	Jan. 2	Jan. 1	Jan. 2
Dec. 30, 1910.	46,300	49,100	2,400	2,085	1,340	1,490	750,000	74,300
Jan. 14, 1913.	22,800	22,400	3.6	1.9	42.0	16.5	795,200	67,200

(Progressive decrease of the insulation resistance shown in original table with dates of tests.) Tests with lead-sheathed paper commenced March 11, 1911.

The samples under test were submerged in water at least 24 hours before the measurements were taken. The rubber samples when first immersed had a good weatherproof finish, but by March 15, 1912, the weatherproof covering was practically destroyed. It appeared to deteriorate most rapidly at those points where the acid solutions evaporated.

A series of high potential tests was made, as a result of which the authors state: "The rubber insulation undoubtedly withstood better than the cambric and special insulations the treatment accorded to all. The percentage of decrease in insulation was far less in the case of the rubber samples than in the case of either the cambric or the special samples, and at the end of the test insulation resistance of the rubber samples was comparatively high (more than 20,000 megohms). The breakdown voltage of the rubber insulation held up well also. The cambric samples were the most affected by the treatment, for although both cambric and special samples decreased in insulation resistance to less than 2 per cent. of their original values, the breakdown strength of the special samples was well maintained throughout the test, whereas all but one of the cambric samples broke down on high potential during the test."

THE WASTE MATERIAL DEALERS DINE.

WASTE material—often irreverently referred to as junk—must be wholesome provender, for the National Association of Waste Material Dealers, which on March 17 celebrated its first birthday, is assuredly a very husky infant.

This celebration took the form of a dinner at the Hotel Astor, New York. The toastmaster was Mr. Theodore Hofeller, who acted as president of the association during its first year. Mr. Hofeller gave an admirable address full of information regarding the work done by the waste material dealers of the United States. He showed the value of the waste collected in the different departments of this industry and quoted figures given by some statistician who has devoted much attention to this subject, showing that the aggregate value of the reclaimed waste in the United States for the past year was \$700,000,000. This seems at first blush as a rather large figure, but probably it is not very far out of the way.

Mr. Hofeller then introduced, as the special guest of the evening, the Honorable Curtis Guild, of Boston, who was three



THEODORE HOFELLER

times Governor of Massachusetts, once Ambassador to Mexico, and more recently Ambassador to Russia—to say nothing about future political honors that undoubtedly await him. Anybody who has heard Mr. Guild speak knows what an excellent speaker he is—as he well might be, from the years of extensive experience that he has had in the cultivation of this art. Incidentally, he is the proprietor of the "Commercial Bulletin" of Boston, which made his choice as chief speaker at this function eminently appropriate.

Mr. Guild began by reciting some humorous incidents connected with his political campaigns, and particularly with the campaign that he made with Mr. Roosevelt when the latter was running for the presidency. He then took up the subject of the evening, beginning as follows:

"I congratulate you most heartily on the success of this thriving organization, as well as on the eminent service that this great industry renders to the business world and to American industry.

"If praise is to be given to those who conserve our water powers, our forests and our natural deposits of minerals, praise should also be given to those who, by the prevention of the waste of raw material, add to our national wealth, reduce the cost of living, provide new national industries and increase the prosperity of our country.

"Over forty years ago my beloved father was the pioneer in journalism to recognize the importance and the value of this branch of national industry. For years the paper which he founded was the only one in the country to publish any general market report covering the entire industry, yet so swift has been your development that to-day there is scarcely a commercial journal in the United States that does not pay some attention, at least, to a portion if not to the whole of the market in which you are interested."

In his exceedingly interesting address—which took up the history from remote times of waste reclamation—he had this to say about the rubber industry: "The increase in the use of rubber and the corresponding failure in an equal increase of supply, combined with the failure to invent a substitute, would long ago have brought the cost of rubber to so lofty a level that were it not for the reclaiming and utilization of waste rubber, it would frankly be impossible for the poorer people who live in inclement climates to be sheltered as they now are sheltered by comparatively inexpensive waterproof shoes and clothing."

He cited the fact that the census of 1913 shows that while the United States exported rubber scrap to the value of \$1,000,000, it imported other rubber scrap to the value of \$3,000,000, proving that we were utilizing more of this material in this country than we produce ourselves.

Mr. Guild was followed by Mr. Louis Birkenstein, the newly elected president of the association, who proved himself an entertaining story teller—a happy gift for a presiding officer. Not that his address was all stories, because it had its serious side and not only diverted but instructed the members of the association and their friends. Captain F. H. Appleton, who as president of the Rubber Reclaimers' Club, represented that organization, spoke of the relations existing between the reclaimer and the waste material dealer.

In the cabaret that followed (of a very proper and harmless character) there was a magician who gave some fine examples of converting waste material into various utilities, by extracting greenbacks from a half-smoked cigaret, taking dollar bills from the core of a red apple and filling one of the diner's pockets with playing cards which he immediately took out again in the form of a very much alive and energetically kicking white rabbit.

The association, tho only a year old, has a substantial membership which gives the organization promise of permanence and great success. Its present officers are: President, Louis Birkenstein; vice-presidents, Simon Weil, C. B. White, Edward Stone, H. H. Cummings and William Buxton; treasurer, Mark Sherwin; secretary, Charles M. Haskins.

THE SCRAP RUBBER CLUB ELECTS OFFICERS.

The Scrap Rubber Dealers' Club held its annual meeting in New York, March 17, at which the following officers were elected: Theodore Hofeller, president; Edwards Bers, treasurer; H. H. Cummings, secretary; Paul Loewenthal, first vice-president, and Aaron Bers, second vice-president.

SHALL WE THROW AWAY OUR RUBBERS?

A New Jersey chemical company invites the public to abandon its rubbers. This company is advertising a certain liquid named "Dri-Foot" which it says if applied to a leather shoe will make it absolutely waterproof. It also states that after this waterproof application the shoe is neither greasy nor sticky and that it can be polished as readily as before. If this is true "Dri-Foot" is certainly a desirable commodity; but in view of the long line of waterproofing liquids which have been marching down the corridors of time—none of them in reality so very waterproof—it is quite likely that the sixty million Americans who annually buy rubbers will still continue to do so.

The Obituary Record.

J. HOWARD FORD.

J. HOWARD FORD, for many years president of the Meyer Rubber Co., and a director in the United States Rubber Co., ever since it was organized twenty years ago, died suddenly of apoplexy on the evening of March 2, at his winter



J. HOWARD FORD.

home, the Plaza Hotel, New York. It will be recalled that that date was immediately after the great snowstorm, when the streets were badly drifted and walking extremely difficult. It is thought that Mr. Ford overtaxed himself in going from his office to the hotel. Tho previously his health seemed to be most excellent, he was stricken soon after reaching the hotel and died before his doctor arrived.

Mr. Ford was born in New Brunswick, New Jersey, December 10, 1854, the son of John R. Ford, one of the pioneers in rubber manufacture in this country, from whom he inherited large rubber interests. He was educated at Phillips Academy, Andover, Massachusetts; Williston Seminary, East Hampton, of the same State, and at Princeton and Cornell, besides attending school for some time on the Continent.

He had many other interests besides those connected with the rubber industry and was a trustee of the American Surety Co. and a director of the New York Mutual Gas Light Co. He devoted a great deal of money and much time to a model stock farm which he owned at Stony Ford, Orange County, New York, which was particularly famous for its fine horses. He lived on this farm during the greater part of the summertime, passing the winters at the Plaza Hotel. He was a member of many clubs, including the Union, Union League, New York Yacht and Riding Clubs, and was widely known in the financial and social circles of New York.

He was interested in educational matters and had served for some years as trustee of Rutgers College, New Brunswick, and was the donor of "Ford Dormitory," a handsome structure which he built for the college at a cost of \$120,000.

The funeral services were held on the morning of March 6 at the Fifth Avenue Presbyterian Church, the officiating clergymen being the pastor of that church, the Reverend J. H. Jowett, D.D., and the Reverend Ellis Bishop, of Amherst, Massachusetts, a cousin of Mr. Ford.

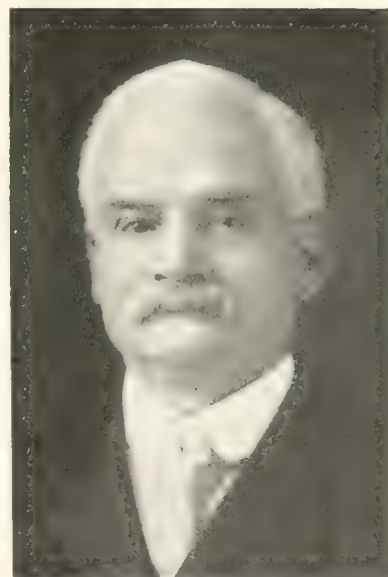
ALFRED HOPKINS.

Alfred Hopkins, president and treasurer of the Boston Gore & Web Manufacturing Co., passed away very suddenly, of heart failure, at his home in Chelsea, Massachusetts, on February 27.

Mr. Hopkins had been connected with the manufacture of elastic goring and elastic webbing since 1862, and he was probably the pioneer manufacturer of these materials in this country. He was born in Leicester, England, in 1841, but when 21 years old came to this country and was largely instrumental in establishing the Goodyear Elastic Fabric Co., of Easthampton, Massachusetts, the first company to make elastic fabric on this side of the water. He became its superintendent and remained with this company for four years, until 1866, when he took charge of the new plant of the American Suspender Co., in Waterbury, Connecticut. He was associated with a number of different gore manufacturing companies from that time until 1893, when he incorporated the Boston Gore & Web Manufacturing Co., of Chelsea, of which he was president and treasurer from the date of its incorporation until the time of his death.

Mr. Hopkins was not only prominent in this particular branch of the rubber industry, but he was extremely active in the civic life of the city of Chelsea. He was prominent in Masonic circles and an active member of the First Congregational Church. The services, which were held in that church March 2, were attended by a very large number of the citizens of Chelsea and neighboring towns.

He is survived by his wife, his son Edmund—who was asso-



ALFRED HOPKINS.

ciated with him in business—and by three daughters—one of whom is the wife of the famous English novelist, E. Phillips Oppenheim.

A. C. BAKER.

A. C. Baker, for a number of years manager of the London office of the North British Rubber Co. and more recently general manager of that company at Castle Mills, Edinburgh, died at his home at Thames Ditton, Surrey, on March 7, after an illness of several months.

Mr. Baker was 51 years of age and had been associated in one capacity or another with the North British company for many years. He suffered from nervous breakdown several

months ago and since that time had been compelled to relinquish his business, because of his straightforward and honorable character, and was generally popular in the rubber trade of England.

GEORGE WESTINGHOUSE

Probably not one of the ten thousand daily papers published in the United States failed to print a more or less extended reference to George Westinghouse, the inventor of the air brake, who died on March 12, in his 68th year; for this one invention—to say nothing of the many others of which he was the author—added incalculably to the welfare of the human race. During the last thirty years he contributed a great variety of new ideas to the development of many industries, particularly in the direction of utilizing electrical power. But he was always best known by reason of the air brake, which he invented when only 21 years of age and which after many failures he finally succeeded in getting a railroad to try. It was originally tested on a minor branch of the Pennsylvania system. It proved its great value at the first trial and was immediately adopted by all the great railway systems. He is said to have left a fortune of between \$20,000,000 and \$30,000,000, but this is a very small incident in the life of such a man as Westinghouse, who long since took his place among the great benefactors of mankind.

He was born near Schenectady, New York, October 6, 1846, and died at his home in New York City. His wife and one son, George Westinghouse, Jr., survive him.

WILLIAM B. McELROY

William B. McElroy, for a number of years identified with the manufacture of rubber footwear, died at his home in Providence, Rhode Island, on March 8, after a protracted illness.

Mr. McElroy was born in Providence June 9, 1854. In November, 1882, he married the daughter of Joseph Banigan, at that time president of the Woonsocket Rubber Co., and often referred to as the "Rubber King." Mr. McElroy became closely identified with many Banigan interests, and was made superintendent of the Hayward Rubber Co. at Colchester, Connecticut, later becoming identified with the Woonsocket Rubber Co., continuing that connection until this company was bought by the United States Rubber Co., in 1893.

In 1899 Mr. McElroy's health began to fail and he retired from active business interests and devoted the rest of his life quite largely to travel. His wife, two sons and two daughters survive him.

JOHN D. LINTSEY

John D. Lindsey, St. Louis manager of the Kelly-Springfield Tire Co., died in the Deaconess Hospital of that city on March 4, of typhoid fever. Tho associated with the Kelly-Springfield company for some time, he had represented them in Missouri only since last September, having been transferred to this point from Cleveland, Ohio. He was 34 years old and is survived by his wife and a young daughter.

PROPOSALS FOR GOVERNMENT SUPPLIES

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until April 7 for furnishing the following: Schedule 6,517, wash deck hose; schedule 6,518, flexible copper hose and composition unions. Tenders are also invited until April 14, under schedule 6,514, for cotton and rubber insulating tape.

Bids will be received until April 14 by the Bureau of Supplies and Accounts, Navy Department, Washington, under schedule 6,529, for furnishing conveyor belt. Report No. 1,693.

Sealed proposals, in triplicate, will be received at the office of the General Purchasing Officer of the Isthmian Canal Commission, Washington, until April 3, for furnishing supplies, among which are included hose and rubber bands. (Circular No. 835.)

FOREIGN TRADE OPPORTUNITIES.

In calling attention to the market for motor car tires in his district, an American consul states that American manufacturers must pay strict attention to the requirements if their products are to be successfully marketed. He states that if good agents are secured, and the manufacturers are willing to help advertise their goods, there should be a largely increased market for tires. Copy of the complete report, and a list of dealers in automobiles and accessories, may be obtained from the Bureau of Foreign and Domestic Commerce. Report No. 12,639.

An American consular officer reports that a resident of a European country is interested in hospital and sanitary apparatus, perfumery, surgical instruments, material for dressing wounds, cotton gauze, bandages, etc. Correspondence is desired with American manufacturers of these articles. Bank references are furnished. Report No. 12,647.

A report from an American consular officer in Canada states that a firm in his district desires to receive from American manufacturers and exporters catalogs and price lists of fire-fighting apparatus of all kinds, including fire engines (both horse and motor), hook and ladder trucks, hand extinguishers and fire hose. Prices may be quoted f. o. b. appropriate ports. Report No. 12,704.

A dealer in automobiles and accessories in France informs an American consul that he desires to be put in touch with American manufacturers of automobiles and accessories, with a view to representing them in the city in which he is located. Report No. 12,724.

A report from an American consul in Great Britain states that a town council in his district has decided to spend about \$7,500 in acquiring a fire engine and equipment. American manufacturers should communicate with either the town clerk or the superintendent of the fire brigade. Report No. 12,779.

RECENT CUSTOMS RULINGS.

According to the ruling of the Board of United States General Appraisers—later confirmed by Judge Smith of the United States Court of Customs Appeals—leather strips of a form and size adaptable for conversion into automobile treads of different lengths and widths are subject to an import duty of 5 per cent., as leather belting, as prescribed in the first part of paragraph 451, with an additional 10 per cent. as being cut into forms. This decision was reached after an appeal by the Michelin Tire Co., which claimed a flat rate of 5 per cent. on imports of this nature as against the duty taken by Collector Malone of 15 per cent. ad valorem, under paragraph 451 of the old law—leather not specially provided for—together with an additional 10 per cent. for leather cut into form for manufacturing purposes.

The protest of J. Einstein and F. L. Kraemer & Co. against a recent assessment on waterproof cloth has been sustained by the board. The cloth—which consists of a fabric composed of two pieces of cotton, one knitted and the other woven, and cemented on gutta percha, with the gutta percha between the pieces of cotton—is intended for use in shoe uppers. It was classified for duty as manufactures of cotton at 45 per cent. ad valorem under paragraph 332 of the 1909 tariff. The importers claimed the goods to be dutiable as waterproof cloth, under paragraph 347, in which claim they were upheld, the rate under this classification being 10 cents per square yard and 20 per cent. ad valorem.

The protest of Gallagher & Ascher, of Chicago, against the assessment at 45 per cent. under paragraph 468 of the tariff act, on circular phonograph records composed of vulcanized india rubber, was overruled by the Board of United States General Appraisers. The importers claimed these articles to be dutiable at 35 per cent. ad valorem under paragraph 464 of the 1909 tariff act, or at 20 per cent. under paragraph 480, but the assessment by the Collector was affirmed.

News of the American Rubber Trade.

THE PICHER LEAD CO. HOLDS ANNUAL CONVENTION.

ABOUT the middle of March an annual convention, which lasted three days, was held by representatives and salesmen of the Picher Lead Co. at the plant at Joplin, Missouri. This company, which was established in 1889 and is claimed to be now the largest concern of the kind in the United States, had an output last year amounting to 30,000 tons, consisting principally of pig lead and white lead for use in the manufacture of rubber goods. The lead ore used in the manufacture of these products comes from Missouri, Arkansas and Washington, most of the crude material being mined in Jasper County, Missouri. In addition to the factory at Joplin—which employs 500 men and has been in constant operation, day and night, for the past two years—the company has well established sales branches in New York, Chicago and Pittsburgh, with warehouses in fourteen of the principal cities of the United States. The annual conventions bring together the sales and manufacturing forces with the officers of the company, who review the work of the past year and prepare plans for the future. While the volume of business for 1913 was the largest in the history of the company, it is expected that this will be exceeded in 1914, due to additions and improvements made during the year. Among these are included increased facilities in the oxide pulverizing and red lead departments, the erection of a pig lead refinery and a two-story laboratory (where seven chemists, each a specialist in some particular branch of the industry, are employed), also a two-story reinforced concrete welfare building for the accommodation of the factory employees—in conjunction with which and in addition to the usual welfare advantages medical treatment is provided, physical tests being made at time of employment and each week thereafter in the case of each employee.

RUBBER COMPANY DIVIDENDS.

On March 4 the board of directors of the Rubber Goods Manufacturing Co. declared from the net earnings of the company the sixtieth regular quarterly dividend of $1\frac{3}{4}$ per cent. on the preferred stock and a dividend of 3 per cent. on the common stock—both payable March 16, 1914.

The Batavia Rubber Co. has declared a regular quarterly dividend of $1\frac{1}{2}$ per cent. on its preferred stock; also a regular quarterly dividend of 1 per cent., with an additional dividend of $\frac{3}{4}$ of 1 per cent. on its common stock—both payable April 1 to stockholders of record on March 16.

The Portage Rubber Co. on March 18 declared a quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred capital stock—payable April 1 to stockholders of record on March 1.

The B. & R. Rubber Co. has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock, payable April 1 to stockholders of record on March 27.

A common stock dividend of 20 per cent. was declared on March 12 by the directors of the Goodyear Tire & Rubber Co.

The Lee Tire & Rubber Co. has declared a quarterly dividend of $1\frac{3}{4}$ per cent., payable April 10 to stockholders of record on March 20.

The Canadian Consolidated Rubber Co. has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on preferred stock, payable April 1 to stockholders of record March 23.

CAPITAL INCREASE

Notice has been filed by the Dayton Rubber Manufacturing Co., Dayton, Ohio, of an increase of its capital from \$150,000 to \$1,000,000.

MANHASSET FABRIC MAKES MORE RACE RECORDS

The product of the Manhasset Manufacturing Co. of Providence made further records for endurance in automobile road racing in the Vanderbilt Cup Race recently held at Santa Monica, California. Tires built of their regular stock Sea Island fabric carried DePalma to victory without a stop, establishing a new record of 75.5 miles per hour for this event. The second, third and fourth cars to finish also had tires made up of the same fabric. The Mason car, finishing in third place, had no tire change, and the Stutz finishing in fourth place had only one change.

This enviable experience of the Manhasset product is a sequel to the reputation gained last season in racing tires. Starting with the Indianapolis Speedway event on May 30, in which the tires carrying Mulford's Mercedes established a new world's record for endurance, going 500 miles at terrific speed without a change, a long series of wonderful tire records were made.

All these tires contained the regular stock fabric of the Manhasset concern.

THE ANNUAL MEETING OF THE RUBBER CLUB.

The annual meeting of The Rubber Club of America, for the election of officers and other business that may come before it, will be held in Boston on April 21. The nominations made for the various offices by the Nominating Committee, to be voted on at that meeting, are as follows: President, George B. Hodgman; vice-president, Frederick H. Jones; treasurer, J. Frank Dunbar; secretary, H. S. Vorhis; honorary vice-presidents, Augustus O. Bourn, L. Dewart Apsley, John H. Flint, Alexander M. Paul, Arthur W. Stedman, Henry C. Pearson, Frederick C. Hood; directors, Francis H. Appleton, H. T. Dunn, H. S. Firestone, George E. Hall, Howard E. Raymond, Homer E. Sawyer, Henry Spadone, Elisha S. Williams, Albert Zeiss.

Immediately after the business meeting, and beginning at 7 o'clock sharp, there will be an informal dinner (to cost \$2.50 per plate), the business meeting and the dinner both being held at the Art Club. It is expected that there will be several good speakers. Among them will be Col. Henry L. Kincaide, who had charge of the recent Boston Chamber of Commerce excursion to South America, and who will describe what he saw on that memorable trip.

New firm members were elected at the last meeting of the Executive Committee as follows: F. H. Appleton & Son, Boston, Francis H. Appleton, representative; The Quaker City Rubber Co., Philadelphia, Charles A. Daniel, representative; The I. B. Kleinert Rubber Co., New York, Colonel H. A. Guinzberg, representative; The Easthampton Rubber Thread Co., Easthampton, Massachusetts, W. L. Pitcher, representative. Theodore Hofeller, of Buffalo, was elected an associate member.

CHANGES IN THE UNITED STATES RUBBER BRANCH STORES.

The branch store department of the United States Rubber Co. on March 14 announced the following appointments: Edward T. Smith, assistant manager branch stores; S. H. Jones, president Goodyear's India Rubber Selling Co., New York; W. H. Porter, president and treasurer Enterprise Rubber Co., Boston; W. A. North, president and treasurer Pittsburgh Rubber Co., Pittsburgh; Benjamin Robinson, president Maryland Rubber Co., Baltimore; J. S. Hallahan, president Banigan Rubber Co., Baltimore; William Webster, president and treasurer Columbus Rubber Co., Columbus.

A book for everybody interested in tires—"Rubber Tires and All About Them"—this office.

WILLIAM A. DE LONG.

William A. De Long, whose brilliant work in connection with the affairs of the New York Commercial Co., has won the unqualified admiration of financiers of two continents, has long been well known to the rubber trade. His business career began in 1855 in the West Indian house of Josiah Jex, then importing india rubber to New York. For them he visited the rubber-producing countries of Central and South America, and then formed the New York house of William Jex & Co., which was an important factor in early rubber importing for many years. This company, however, terminated its career in 1886, when the firm of De Long, Betts & Co. was formed, with headquarters in New York and a branch house in New Orleans.



WILLIAM A. DE LONG.

Before this time few were very few houses importing rubber alone, and until the late 70's rubber was only an incident in the many varieties of goods brought to this country by importing houses. The firm of De Long, Betts & Co. was one of the first to be devoted exclusively to rubber, and it wielded a wide influence in this field for many years. Always enterprising and ahead of the times, Mr. De Long determined to be independent of ships, sailings, freight rates, etc. In 1880 he built a 1,000-ton steamer of his own. On her first voyage this ship ran on the rocks and was lost. This, however, did not daunt his courage, and two years later he completed a second steamer. This made two successful trips, but was lost on the third. He kept on building and buying and owned no less than fourteen boats during his career as rubber importer. Incidentally, he has crossed the Atlantic more than a hundred times.

In 1894, Mr. De Long retired from De Long, Betts & Co. and became vice-president of the New York Commercial Co., with which firm he remained until January 1, 1901, when he retired from active business. In 1902 he was appointed deputy commissioner of the Department of Water, Gas and Electricity for the Borough of Manhattan, New York City.

In 1908 he became trustee to administer the affairs of Coster, Knapp & Co., New York stock brokers, who were forced into bankruptcy in May of that year. The liabilities greatly exceeded \$1,000,000, and the assets at the outset appeared to be almost a minus quantity. However, by his untiring efforts and his ability Mr. De Long saved the creditors many thousands of dollars. In April, 1913, he was appointed trustee of the New York Commercial Co., which went into bankruptcy in February of that year.

Energetic, alert, virile, with a genius for financial problems, coupled with wonderful administrative ability, Mr. De Long is one of the most interesting figures in the rubber trade.

PERSONAL MENTION.

C. B. Whittlesey, manager of the Hartford Rubber Works Co., has recently been elected to the presidency of the Chamber of Commerce of Hartford, Connecticut.

T. Barney Kennard, who has become associated with the City Auto Tire & Supply Co., distributors of Miller tires, 1200 Huron road, Cleveland, Ohio, was formerly manager of the Swinehart Tire & Rubber Co.'s branch in that city. He will act as factory representative in the northeastern section of Ohio.

Otis R. Cook, for the past three years manager of the Cleveland branch of the Kelly-Springfield Tire Co., has been promoted to the position of general sales manager of this concern. He will continue his headquarters at Cleveland. Previous to his association with the Kelly-Springfield company Mr. Cook had been identified for a number of years with the tire sales operations of the Goodrich, Firestone and Federal companies.

E. R. Perkins has been appointed general manager of the Overman Tire Co., New York, succeeding Theo. Reynolds.

Jesse W. Long, who for more than twenty years has been identified with the rubber industry in Naugatuck, Connecticut—for five years with the Goodyear's Metallic Rubber Shoe Co., and since 1897 in the office of the United States Rubber Co. Regenerating Plant in that city—became associated on March 1 with the firm of S. Birkenstein & Sons, scrap rubber dealers of Chicago, Illinois, assuming charge of their eastern branch located in the Times Building (Rooms 1501 and 1502), Times Square, New York City.

C. O. Brandes, manager of the export sales and shipping departments of the Firestone Tire & Rubber Co., of Akron, Ohio—whose portrait appeared on page 83 of the November number of THE INDIA RUBBER WORLD, accompanying a mention of his connection with this concern—sailed for Europe the first week in March for an extensive tour in the interest of the Firestone company.

W. T. Underwood, instructor in salesmanship for the Goodyear Tire & Rubber Co., has been secured to teach a class in this branch of the educational department of the Y. M. C. A. at Akron. Mr. Underwood's experience especially fits him for such a role.

During the absence in Europe of J. D. Anderson, manager of the United States Tire Co. in New York, J. C. Weston is acting sales manager.

Ralph Upson, of Akron, winner of the international balloon races in Paris last year, will compete in similar races to be held at Kansas City next October, representing on that occasion the Aero Club of America. A national race for the selection of two other American pilots to represent the United States at the international contest will be held at St. Louis on July 4.

J. O. Stokes, president of the Thermoid Rubber Co., of Trenton, New Jersey, is now on a trip to the Pacific coast.

R. M. Merriman, formerly connected with one of the large rubber manufacturers in Akron and more recently associated with the Mishawaka Woollen Manufacturing Co., of Mishawaka, Indiana, in the experimental department, has accepted a position as factory superintendent with the Columbia Rubber Co., Columbiana, Ohio.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; What I Saw in the Tropics; Rubber Tires and All About Them, and Rubber Trade Directory of the World.

COMMODORE BENEDICT SAILS AGAIN.

E. C. Benedict, until recently a director of the United States Rubber Co., who arrived in New York harbor on February 18 after an 8,000-mile cruise through the West Indies and up the Amazon, sailed again on March 6 for another five-weeks cruise among the West Indies, taking with him eight or ten guests. The weather conditions in New York and New England during the latter part of February and first of March were so highly unattractive that the Commodore decided that it was preferable to board his yacht, the "Oneida," again, and sail back to a more comfortable climate.

MR. MATCHETT JOINS THE ROBINS CONVEYING BELT CO.

Thomas Matchett, who has been identified with the Republic Rubber Co. since 1904, recently resigned his position as manager of the mold and belt departments to become vice-



THOMAS MATCHETT

president and manager of the Robins Conveying Belt Co. of New York, which is closely associated with the Republic company and is a large distributor of conveyor belts.

MR. GLENDENNING LEAVES THE MANHEIM COMPANY.

W. J. Glendenning, who for the last three years has been connected with the Manheim Manufacturing & Belting Co., Manheim, Pennsylvania, has sent in his resignation, to take effect on April 18. Mr. Glendenning came from England in 1911 to instal machinery at the Manheim plant for the manufacture of balata belting. He had previously been engaged in the manufacture of this sort of belting in England.

TIRE COST IN OPERATION OF FIRE APPARATUS.

In the substitution of motor fire apparatus for horse-drawn equipment the expense of operation—in which tires form a factor—is an important item of consideration. A report submitted to the National Fire Protective Association by a representative of the National Board of Fire Underwriters contains a table of comparative yearly operative cost between horse-drawn and motor-driven machines in which the following figures are given: Hose Wagon—horse-drawn, repairs and tires, \$30; Steam Fire Engine, tires and repairs, \$70; Two Wheel Tractor, tires, \$40; Automobile Hose Wagon, tires, \$60; Automobile Combination Pumping Engine and Hose Wagon "Z," tires, \$80; Steam Fire Engine and Tractor, repairs and tires, \$125.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

MR. RODENBACH RESIGNS FROM THE REGENERATING COMPANY.

Mr. William T. Rodenbach recently resigned from the rubber Regenerating Co., of Naugatuck, Connecticut, with which the reclaiming plant of the United States Rubber Co. lately merged. This does not mean, however, that he is retiring



W. T. RODENBACH

from the rubber industry, for such is far from being the case. He still retains his position as treasurer of Goodyear's Metallic Rubber Shoe Co., a position which he has filled for many years. But his resignation from the Regenerating company indicates that he will no longer take the active part in rubber reclaiming that he has taken in the past. Mr. Rodenbach has been identified with the rubber reclaiming department of the United States Rubber Co., as manager, ever since its formation in 1892, during which time he probably bought a larger volume of scrap rubber—principally old boots and shoes—than anybody else on either side of the water, his aggregate purchases running into the hundreds of thousands of tons, all of which was made into reclaimed rubber under his direction. His personal acquaintance among scrap rubber dealers and collectors practically includes everybody at all prominent in that industry in the United States and Europe.

As Mr. Rodenbach, in addition to his position in the Goodyear company, still maintains his connection with various other manufacturing companies, as, for instance, the presidency of the Naugatuck Manufacturing Co. and the vice-presidency and treasurership of the Naugatuck Chemical Co., and continues his varied interests in the civic life of Naugatuck, his time is still likely to be fairly well occupied.

AVIATORS WITH PARACHUTES SEWED ON.

One great drawback about aviation is the unhappy fact that so many aviators take tumbles of anywhere from 50 to 5,000 feet, with direful—and generally fatal—results. A great many active minds are busy at present on the problem of life-preservers for aviators. A big parachute would serve, except that it is difficult to arrange it so that it will operate when needed. One genius has devised the following scheme: He has made a jacket with front, back and arms covered with inverted pockets—that is, opening down instead of up—and they are made loose and baggy. The theory is that when a man begins to drop all these little pockets will open and catch the air and sustain his weight. They probably would sustain a little of his weight, but it would be a venturesome aviator who would care to drop very far with nothing to break his descent except this parachute jacket.

NEW INCORPORATIONS

Acorn Insulated Wire Co., February 20, 1914; under the laws of New York; authorized capital, \$100,000. Incorporators: Walter V. Donovan, 34 Pine street; Joseph Quittner, 42 Broadway, and Joseph L. McMahon, 27 William street, all in New York City.

Akron Tire & Rubber Co., The, February 16, 1914; under the laws of Massachusetts; authorized capital, \$21,000. Incorporators: Max Laserson, Israel Barry and Charles Braunstein—all of 24 Columbus avenue, Boston, Massachusetts. To manufacture, buy and sell automobile tires, rubber, rubber goods and automobile supplies.

American Auto Tire Jobbers, February 9, 1914; under the laws of Pennsylvania; authorized capital, \$20,000. Incorporators: Michael E. Hasson, 2128 South Fifteenth street; Hugh B. Turner, 5645 Cedar street, and William H. Denney, 1727 North Sixtieth street—all in Philadelphia, Pennsylvania. To buy, sell and generally deal in automobile tires, tubes, supplies, etc., and to act as jobbers, agents and representatives of firms in buying, selling and generally dealing in said articles.

Columbia Rubber Co., The, February 9, 1914; under the laws of Massachusetts; authorized capital, \$50,000. Incorporators: Patrick H. Crowley, Hugh C. Cameron and William F. Crowley—all of 301 Congress street, Boston, Massachusetts. To manufacture and sell men's and women's bathing suits, rubber garments, etc.

F. C. D. Inner Tube Protector Co., February 4, 1914; under the laws of Michigan; authorized capital, \$150,000 (amount subscribed, \$75,000; divided in shares of \$10 each). Incorporators: Frank R. Berry, Hilan N. Cole and Niram B. Sackett—all of Detroit, Michigan. To manufacture and deal in all kinds of rubber, wood and metal goods, and in automobile accessories.

Fisk & Dunham Rubber Co., February 26, 1914; under the laws of New Jersey; authorized capital, \$50,000. Incorporators: Clark F. Fisk, Robert C. Dunham—both of Trenton, New Jersey, and Albert A. Taylor, Allentown, New Jersey. To manufacture, purchase and deal in crude rubber and rubber goods in all forms, and also the making, purchasing and selling of rubber tubes, tires, etc.

Hercules Tire Protector Co., January 26, 1914; under the laws of Massachusetts; authorized capital, \$10,000. Incorporators: John A. Gilbert, 897 Main street; Elmer Balod, 18 Chilton street—both in Cambridge, Massachusetts—and Adolph E. Elster, 421 Pine street, Dedham, Massachusetts. To manufacture and deal in tire protectors and automobile supplies and accessories, and to conduct an automobile repair shop business.

Indestructible Tire Corporation, March 6, 1914; under the laws of New York; authorized capital, \$200,000. Incorporators: Albert L. Potter, 678 West One Hundred and Seventy-eighth street; John A. Inslee, 259 Broadway, and Anselm P. Anderson, 34 Nassau street—all in New York City. To deal in auto tires, etc.

Inter-State Auto Supplies Co., March 5, 1914; under the laws of Delaware; authorized capital, \$300,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin and S. C. Seymour—both of Camden, New Jersey. To manufacture and deal in merchandise and articles of rubber, etc.

Lincoln Tire & Rubber Co., Inc., March 7, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Olaf K. Pacht, David Gross and Jacob Cohen—all of 46 West Twenty-fourth street, New York City.

Long Island Tire Co., Inc., The, March 6, 1914; under the laws of New York; authorized capital, \$1,500. Incorporators: Marie P. Denton, John S. Denton and Harry E. Wetzig—all of Freeport, New York. To deal in auto tires, etc.

Midgeley Tire & Rubber Co., The, January 28, 1914; under the laws of Virginia; authorized capital, \$550,000. Incorporators:

A. C. Lewis, 839 North Fourth street; Thos. S. Jones, 1436 Ridge avenue; J. Oscar Naylor, 420 Dock street; Roy R. Carpenter, 1396 Euclid avenue, and D. R. Williams, 489 South Fifth street—all in Steubenville, Ohio.

National Raincoat Co., Inc., January 29, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators: Abner S. Werblin, 1427 Madison avenue; Sidney J. Laub, 878 East One Hundred and Seventy-sixth street—both in New York City—and Dora Magida, 1899 Bergen street, Brooklyn, New York.

Dr. Neal's Crescent Arch Supporter Co., March 3, 1914; under the laws of Maine; authorized capital, \$200,000. Incorporators: Horace Mitchell (president), H. A. Paul (treasurer) and M. G. Mitchell—all of Kittery, Maine. To deal in arch supporters, rubber devices of all kinds, and to manufacture and deal in footwear, etc.

Panama Tire & Rubber Co., Inc., March 6, 1914; under the laws of New York; authorized capital, \$15,000. Incorporators: Arthur E. Schwartz, 222 West Fifty-ninth street; Sidney V. Morris, 302 West Twenty-second street—both in New York City—and George L. Lewis, Whitestone, New York. To manufacture and deal in auto tires, etc.

Penn Yan Cable Co., Inc., February 24, 1914; under the laws of New York; authorized capital, \$50,000. Incorporators: Edia R. Ramsey and George S. Shepard—both of Penn Yan, New York; William H. Neefus, East Orange, New Jersey. Office located at Penn Yan, New York. To manufacture insulated cable, ignition wire, etc.

Renault Tire & Rubber Co., Inc., January 27, 1914; under the laws of New York; authorized capital, \$25,000. Incorporators: Max Hillman, 835 Kelly street, Brooklyn, New York; David M. Hanley, Hotel Grenoble, Fifty-sixth street and Seventh avenue, and Harry Baumstone, 55 East One Hundred and Eighteenth street—both in New York City.

Van Alstyn Co., Inc., A. T., March 11, 1914; under the laws of New York; authorized capital, \$100,000. Incorporators: Albert T. Van Alstyn, 41 Union Square; William C. Mulhausen, 233 Broadway, and Stanley J. Lathrop, 2 Rector street—all in New York City. To manufacture garters, notions, etc.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on March 20 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., common	200	
Ajax-Grieb Rubber Co., preferred	99	102
Firestone Tire & Rubber Co., common	285	290
Firestone Tire & Rubber Co., preferred	108½	110
B. F. Goodrich Co., common	22½	23½
B. F. Goodrich Co., preferred	87	90
Goodyear Tire & Rubber Co., common	180	185
Goodyear Tire & Rubber Co., preferred	95	96½
Kelly-Springfield Tire Co., common	59	60
Kelly-Springfield Tire Co., preferred	143	145
Miller Rubber Co.	128	133
Portage Rubber Co., common .....	...	35
Portage Rubber Co., preferred .....	...	90
Rubber Goods Manufacturing Co., preferred ..	105	110
Swinehart Tire Co.	69½	70½
United States Rubber Co., common	61¾	61¾
United States Rubber Co., 1st preferred	102¾	103½

The city of Cleveland, Ohio, has awarded to the Safety Insulated Wire & Cable Co., of New York, through its western representatives, M. B. Austin & Co., a contract for approximately \$28,000 worth of insulated wire and cable, in connection with the underground fire alarm and police signal system which is being installed in that city.

"PARANITE."

"Paranite" rubber-covered wires and cables, made to meet all requirements of new code specifications, are the specialty of the Indiana Rubber and Insulated Wire Co., of Jonesboro, Indiana, which, by the way, is one of the oldest and most successful rubber mills of the Middle West. The "Paranite" line includes underground, aerial, submarine cables and cables for inside use; telephone, telegraph, fire alarm, electric light and power, wire and cables, all of recognized standard.

TRADE NEWS NOTES

Flood tires—made by the Hood Rubber Co., of Watertown, Massachusetts—are being distributed in Kansas City, Missouri, by the Rubber Tire Repair Co., at 915 East Fifteenth street, this company, under the management of H. A. Winter, having been given the agency for Missouri, Kansas and Oklahoma.

The American Rubber Co., manufacturers of rubberized clothing, have located at Bush Terminal Building No. 20, Brooklyn, New York, occupying a space in that building equal to 10,000 square feet.

Plans have been accepted and contract awarded for the erection of a new plant at East Palestine, Ohio, for the National Tire & Rubber Co., of that place. The building is to be of reinforced concrete, and work on it is to be rushed with all possible despatch. When finished this plant will represent the highest art of Youngstown architects, engineers and builders, in factory construction.

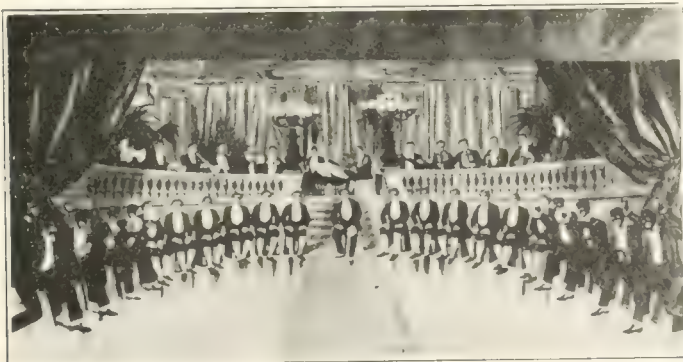
The Schacht Rubber Co., located in Huntington, Indiana, is one of the progressive rubber manufacturing organizations of the Middle West. It started in a small way in 1909 and in five years has achieved a remarkable growth. The Schacht product include plumbers' supplies, marine valves, non-marring rubber mallets and a general line of molded specialties.

UNDERGROUND TUNNEL SYSTEM.

In connection with the completion of the Boston Woven Hose & Rubber Co.'s new mill room and power plant is included a complete system of tunnels connecting all buildings. Electric trucks carry both raw and finished materials under cover and protected at all times, starting from cars on the raw materials siding and ending in the shipping room. A complete system of telephones and an auto. call recently installed make it possible to reach any individual in any of the 16 buildings at any time.

RUBBER MEN GIVE A MINSTREL SHOW.

The employes of the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, recently gave a highly creditable minstrel show in one of the large theaters of that city. The performance was attended by many of the prominent citizens of the city, and



THE FEDERAL CO.'S MINSTREL MEN.

good account of themselves. These various associations are encouraged by the officers of the company, as they tend to give the employes a certain *esprit de corps*.

PRESENTS ITS EMPLOYEES WITH BANK ACCOUNTS

An announcement has been made by the Detroit Insulated Wire & Cable Co. that as a result of combined efforts the company is able to make distribution of a portion of its profits to its employes, as has been the custom for several years. The amount is deposited in a savings bank and a pass book with his share entered therein is handed to the employe. The company aims in this way to emphasize its belief in the mutual profit arising from continuity of service, the reward being for "faithful and continuous employment."

NEW PLANT FOR RUBBERIZING FABRICS.

The Mercury Rubber Co. is equipping a very complete plant for rubberizing textiles in Bush Terminal building No. 20 in Brooklyn. It is installing the latest machinery for this sort of work and putting in such a complete mechanical, technical and chemical equipment that it expects not only to produce a superior article but to be able to do this in a very large volume. It is expected that the plant will be in operation about May 1.

RUMSEY & GREUTERT INCORPORATE.

Robert Rumsey and Henry J. Greutert, formerly connected with Ed. Maurer, have started a crude rubber importing business of their own at 25 Beaver street, New York, under the name of Rumsey & Greutert Co., Inc. Mr. Rumsey is president, Mr. Greutert, secretary and treasurer, and C. J. Weymer, vice-president of the new corporation.

RUBBER GOODS MANUFACTURING CO.

The annual meeting of stockholders of the Rubber Goods Manufacturing Co. for the election of directors and for the transaction of any other business which may properly be brought before the meeting will be held at the principal office of the company, No. 15 Exchange Place, Jersey City, New Jersey, on Thursday, April 9, 1914, at 12 o'clock noon.

The transfer books will not be closed, but the New Jersey Corporation Law will not allow to be voted at said meeting any share of stock which shall have been transferred after March 20, 1914.

NEW BRANCHES FOR BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

In addition to the branch office recently established by the Bureau of Foreign and Domestic Commerce in New York (room 315 United States Custom House), as mentioned on page 249 of our February issue, similar branches have been established at Chicago (629 Federal Building), New Orleans (Association of Commerce Building) and at San Francisco (76-78 Appraisers' Stores Building); and the suggestion is made by the Department of Commerce that firms in these districts avail themselves of the information on file at these branches, time being saved by making application to them instead of to the bureau at Washington.

AMERICAN CHEMICAL SOCIETY.

The forty-ninth meeting of the American Chemical Society will take place at Cincinnati, from April 7 to 10.

Mr. F. W. Weissman is chairman of the Executive Committee, while the other subjects for administrative attention are being dealt with by some nine other committees. Included in the programme are visits to the American Rolling Mills, Middletown, and the National Cash Register Co., Dayton, Ohio.

A special section will deal with "India Rubber Chemistry" and will be of marked interest. Mr. Doris Whipple, of the Safety Insulated Wire and Cable Co., Bayonne, New Jersey, is the sectional secretary. It is expected that this will be the largest spring meeting the society has ever had.

the audience completely filled the house. The program contained the usual features of the professional minstrel show and was highly commended by the critics present. The company also has baseball, football, basketball and bowling teams that give a very

TRADE NEWS NOTES

The Marathon Tire & Rubber Co., of Cuyahoga Falls, Ohio, is now distributing its Marathon tires in the New England territory through the Dayton Tire Co., of Boston, Massachusetts.

The United States Tire Co., of New York, has established a tire distributing agency at Huntington, Ohio, under the management of R. W. Mottler, formerly located at Cincinnati.

The Pennsylvania Rubber Co., of Jeannette, Pennsylvania, has favored some of its customers with a very convenient ash tray. It is made of glass, is four inches in diameter, and the raised edge represents one of the company's oil proof tires with the well-known Vacuum Cup tread. The tray is mounted on a piece of felt, so as not to mar the desk. It is a useful article and the company will undoubtedly have requests for all it cares to circulate.

A new form of preventive against blowouts and punctures is being introduced by the K. & W. Rubber Co., of Ashland, Ohio, under the name of the "Maxotire." This protector—which is especially effective with straight side tires—is made of tire fabric and will adjust itself automatically to either new or stretched tires. It is so constructed as to completely surround the inner tube, a cross section having the appearance—except for circumferential measurement—of an ordinary casing, and is designed to form a non-chafing bed for the tube to rest upon.

A recent consignment by the Firestone Tire & Rubber Co. to its branch at Houston, Texas, comprised a total of 4,000 tires, or two entire carloads—said to be one of the largest shipments of its kind ever received in that city.

The fire which recently destroyed the stores of the Day Rubber Co., at 415-417 North Fourth street, St. Louis, Missouri, resulted in a property loss amounting to \$265,000.

The Independent Rubber Co., incorporated June 23, 1913, and located at 408 Virginia avenue, Joplin, Missouri, expects in the near future to enlarge its plant so that rubber tires may be added to its present line of production, which consists of inner tubes for automobile tires. The litharge used in the preparation of the rubber entering into these tubes is a local product, and the sale of the tube has thus far been confined chiefly to the local market and to Kansas. The officers of the company are: F. A. Wilber, president; Fred Smith, vice-president; B. H. Wilber, treasurer, and Arthur James, secretary.

On page 312 of the March issue of this publication an item appeared regarding the formation of a company known as the Brooklyn Shield & Rubber Co. to take over the business formerly conducted by H. P. Rindskopf, and mentioning the location of the new concern as 397 Myrtle avenue, Brooklyn. This was an error and should have been 397 Sumner avenue.

A wholesale distributing agency has been opened in Kansas City, Missouri, by the McGraw Tire & Rubber Co., of East Palestine, Ohio, under the name of the Kansas City Tire & Rubber Co. This new branch is located at 1516 Grand avenue, and will conduct a wholesale and jobbing business exclusively, carrying a full line of the company's well-known Congress, Imperial and Pullman tires, for distribution throughout the entire Northwest.

Plans are under way for the erection of an addition to the plant of the Canfield Rubber Co. at Bridgeport, Connecticut. This additional building is to be 150 x 200 feet in area, four stories in height and of brick construction.

H. W. Morgan, 4417 Franklin avenue, Cleveland, Ohio, has invented a material that he calls "Morganite, a new vulcanite." It is made by the partial or entire dissolution of wood, the addition of various compounds and then vulcanization. The inventor says his process is applicable to hard rubber and

makes this interesting statement: "By a similar process even hard vulcanized rubber can be dissolved to a plastic state and applied to surfaces of wood or paper and be again vulcanized as a coating, giving the appearance of ordinary hard rubber goods."

The New York Mackintosh Co. expects early in the spring to erect a factory at Mamaroneck, New York, and bids for this work are now being received by the manager, J. Place. The structure under consideration is 52 x 102 feet, two stories high.

Early in March a preliminary certificate of dissolution of the Goodyear Rubber Manufacturing Co., of Naugatuck, was filed in that city. This corporation has existed rather as a matter of form than as being engaged in active operations.

THE IRON KNOWN AS L. H. G. SPECIAL

The L. H. Goodnow Foundry Co., of Fitchburg, Massachusetts, has for several years been manufacturing a special iron which has been extensively used by the United States Government and which lately has come into use in various rubber factories, especially for tire molds, die castings or plates, and for gears. This iron—which is known as the L. H. G. Special—has a tensile strength of from 33,000 to 35,000 pounds per square inch, a density and finish like steel and is said to be free from blow holes. The company is very glad to send manufacturers interested in the subject samples showing the fracture, the perfect thread that the iron takes, as well as its fine finish.

EXTENT AND GROWTH OF THE STAMP TRADE.

A review of the rubber stamp industry shows that there are now in the English speaking countries of the world about 3,000 concerns engaged in the production of rubber stamps and cushion mounts, about 150 of which are new concerns started during the past year. It also indicates constant improvement in the art of stamp rubber vulcanization and an increasing volume of business, sales for 1913 reaching an amount more than 30 per cent. in advance of those of the previous year.

RUBBER REVEALS THE SECRETS OF THE INNER MAN.

To take the measure of man is no new thing, being done with some frequency and with more or less accuracy, but to arrive at a system by which the degree of a man's appetite for food may be correctly measured has hitherto been believed incapable of accomplishment. However, much learning brings about wonderful discoveries, and one of the latest is the discovery by a professor at the University of Chicago that by the aid of a small elongated balloon and a rubber tube it is possible to decide the exact degree of a man's hunger. The balloon, attached to the tube, is first swallowed, then inflated, and the end of the tube attached to sensitized paper. The air escaping from the tube registers on the paper the degree of avidity with which the muscles of the stomach seize upon the supposed food. The market for rubber balloons with tube attachment will no doubt be considerably extended by this latest discovery in usefulness.

HAS ALL THE BOUNCE OF RUBBER

Ernest Jacoby & Co., of Boston, recently sent to this office a couple of round balls about the size of a baseball having the appearance of rubber and certainly its resiliency, for when dropped on the floor they bounded five or six feet into the air; and yet these balls contain no rubber, but were made of a new material, called "Brown Jaco," intended to be used in the manufacture of rubber goods. The makers state that in addition to its remarkable physical properties it has chemical properties that make it possible to use it where materials of this general description could not be used. It costs about one-fifth as much as crude rubber.

THE SCRAP RUBBER TRADE OF 1913 AND 1914.

Some waste dealers who had studied the question recognized the fact early in 1913 that in view of the larger production of crude rubber the supply would exceed the demand, with the result that scrap rubber would have to follow the general decline. While they accordingly reduced their stocks, their example was not generally followed, so that other dealers who held their scrap during the early decline had at a later date to take lower prices.

According to the opinion of the trade, present conditions differ from all past experience. Unless reclaimers can secure scrap at prices in proportion to the value of crude rubber they cannot operate. Some of the less prominent dealers do not recognize this fact, and therefore are holding their stock in the expectation of a reaction. In this connection the opinion has been expressed that unless some new uses are discovered for the increased supply of rubber the present accumulations of waste will sooner or later have to be sold to make room for the large quantities of tire scrap, which will be offered at lower market rates than are now current.

Instead of holding on to their stocks, they are advised to sell out at today's figures and to buy further scrap at current prices. This turning over would relieve the accumulation which now clogs the trade.

Reports of business since the opening of the year show a more or less improved demand for the products of reclaimers. This fact has brought about an advance in the market for scrap.

In the words of a leading member of the trade speaking of the future, it is to be anticipated that the end of the depression has been reached and that we have begun a year of renewed confidence and expansion in all lines of trade. One of the notable events of 1913 was the formation of the National Association of Waste Material Dealers, which has placed the trade in a position it had not previously occupied.

PLANS FOR ORGANIZATION TO TAKE OVER WALPOLE COMPANY.

A plan for the organization of a new company, under the laws of Massachusetts, to take over the business of the Walpole Tire & Rubber Co. has been submitted in circular form to the stockholders of that company by Curtis G. Metzler, the company attorney. The plan provides that the new company shall have an authorized capitalization of \$3,500,000—of which \$2,000,000 is to be 7 per cent. preferred and the balance common stock of a par value of \$100—the initial issue to consist of \$1,813,000 preferred and \$1,500,000 common (an amount equal to the outstanding stock of the present company). All assets of the old company are to be purchased by the Reorganization Committee and present stockholders are to be given an opportunity to subscribe for new stock to the amount of their holdings, an allowance of \$75 to be made for each share of preferred and \$87.50 for each share of common; the balance—\$25 and \$12.50, respectively—to be paid in cash. Should all stockholders take advantage of this opportunity it would result in payments to the amount of \$640,750, which, applied to the present liabilities of approximately \$1,100,000, would reduce these to about \$459,250. The auditors employed by the receivers estimate the net earnings for 1914—

exclusive of the earnings of the sub-companies—at \$300,000 to \$350,000, and it is proposed from these earnings to pay off the indebtedness as well as preferred dividends.

The plan has met with some opposition, circulars bearing the signatures of Clare H. Draper, Edward L. Belding and John C. Hoyer, Protective Committee, Alfred W. Anthony, J. Eugene Osgood and Michael J. Houlihan, Stockholders' Committee, having been sent out which contain the following paragraph:

"We do not believe the proposed plan is practicable, and we deem it our duty to notify all the stockholders that it does not command our approval or support. We believe in reorganization of the company if the creditors are willing to assist. We may recommend the stockholders to put in new money. We propose to send the stockholders, within a short time, further suggestions as to a plan of reorganization which we deem feasible."

Mr. Metzler, in referring to the opposition, makes this statement:

"About one-third of all stockholders have already sent signed agreements to me and have pledged their hearty co-operation. We shall go on with our plan notwithstanding the letter, as it is the desire of many stockholders to have it go through."

A dividend of 4 per cent. to creditors whose claims have already been allowed (amounting to about \$700,000) has been authorized by the court, \$60,000 to be set aside for this purpose and for the payment of a dividend on claims yet to be allowed.

RETAIL PURCHASES OF RUBBER GOODS NOT EXCHANGEABLE.

In many departments of retail stores notices are displayed which state that purchases will not be received for either credit or exchange, and a certain druggist, of Springfield, Ohio, has included in his list of non-returnable goods all hot water bottles, syringes and surgical rubber goods. Customers for these articles are requested to make careful selections, and each purchase is accompanied by a card warning against the loan of the article and calling attention to the fact that while any goods defective in material or workmanship will be replaced, interest in protecting the customer against contagious diseases—the germs of which may very readily be carried by hot water bottles, etc.—is the reason for refusal to take back such articles.

COMPARISON OF CRUDE AND WASTE RUBBER IMPORTS FOR 1911, 1912 AND 1913.

THE most recent statistical record of imports deals with the calendar years 1911, 1912 and 1913, and is reproduced below. It shows the quantities of crude rubber imported for the three years as 82,851,725, 118,058,284 and 115,880,641 pounds. The effect of the recent fall is illustrated by the fact that while in 1913 the quantity fell off about 2 per cent., the value receded about 23 per cent.

In guayule both quantity and amount have fallen off about two-thirds as compared with 1911, while waste has maintained in 1913 its gain of nearly 100 per cent. in both quantity and value made in 1912. The grand totals of unmanufactured rubber for the three years are 168,878,163, 217,076,312 and 196,291,283 pounds.

UNMANUFACTURED RUBBER IMPORTS FOR LAST THREE CALENDAR YEARS.

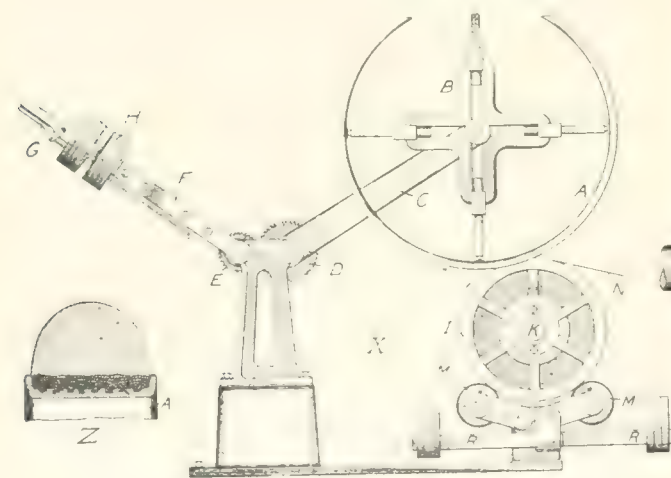
	1911		1912		1913	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
India rubber, etc., and substitutes for, unmanufactured:						
Balata	1,705,158	\$1,170,074	1,114,513	\$667,767	1,508,940	\$792,543
Guayule gum	16,659,948	8,138,801	12,834,214	5,624,882	4,870,203	2,129,681
Gutta-jelutong	46,594,697	2,292,604	48,053,634	2,214,643	36,420,921	1,765,816
Gutta-percha	1,886,214	398,779	661,571	157,341	872,595	199,808
India rubber	82,851,725	74,410,550	118,058,284	99,567,071	115,880,641	76,820,739
India rubber scrap or refuse, fit only for remanufacture	19,180,521	1,530,530	36,354,096	2,973,311	36,737,977	3,193,003
Total unmanufactured.....	168,878,163	\$87,941,338	217,076,312	\$111,205,015	196,291,283	\$84,901,590

New Machines and Appliances.

THE STEVENS SOLID TIRE MACHINE.

AMONG the newer machines relating to the construction of tires is one designed by William C. Stevens, of Akron, Ohio. This machine, which is illustrated in the accompanying drawings, is designed for building up the base portion of solid rubber tires on metallic rims, preparatory to vulcanizing upon the solid base the softer tread portion. In building up solid tires it is usual to form the base of hard rubber, which is grooved or dovetailed into the metal rim, and then to vulcanize the tread of soft rubber onto the hard rubber base. It is the object of this machine to provide a means of forcing the hard rubber into the metal grooves and to apply the successive layers in such a manner that the top layer will present a comparatively smooth surface to which the tread may be more easily vulcanized.

Referring to the drawings, *X* shows a side view of the complete machine, *Y* shows a section through the special roller for applying the hard rubber base, and *Z* is a section through the rim and completed tire. The ordinary metal rim *A* is supported upon an adjustable spider *B* which is pivoted on the arm *C*. The opposite end of this arm bears a gear *D* which engages another gear *E* fixed to the end of the arm *F*. This arm may be raised or lowered with respect to the gear *E* by adjusting a ratchet which engages the teeth of the gear and which is operated by the lever *G*. The outer end of the arm *F* bears a weight *H*, which, through the spur gears, causes the rim *A* to bear down with considerable pressure upon the roller *I*. The construction of this roller is the principal feature of the machine, and it may be better understood by referring to the sectional view *Y*. The roller is made up of a number of plates *J* fastened to the shaft *K*. Between these plates are a number of annular disks *L*. These disks are slightly larger in diameter than the plates and

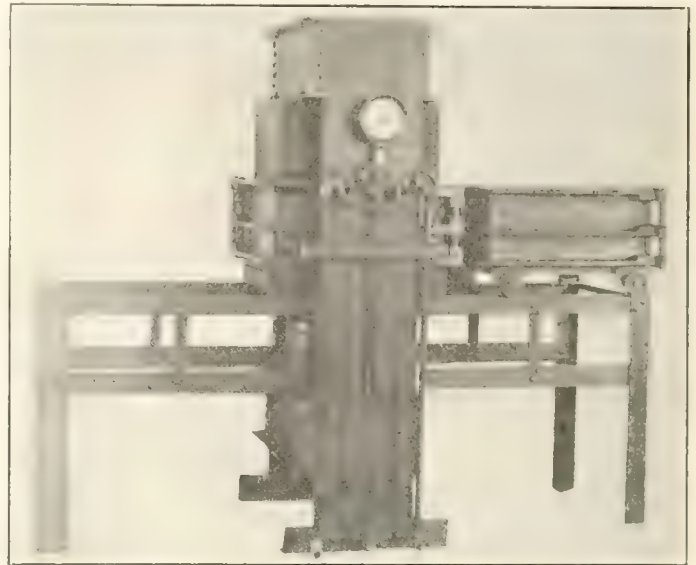


STEVENS NEW SOLID TIRE MACHINE.

their central openings are slightly larger than the hubs of the plates *J*. As the drum revolves upon the rollers *M* the disks *L* are pushed up so that the top of the drum assumes a corrugated appearance. The strip of rubber *N*, which is to form the base of the tire, is fed between the rim *A* and the drum *I*, and the disks *L* force the rubber into the grooves in the rim. As each succeeding layer of rubber is laid upon the rim, the material becomes less susceptible to the pressure of the disks, and when the last layer is reached the rubber base has almost a plain surface. In order to keep the disks pressed up against the rubber as the latter is being applied, the pressure rolls *M* are forced up against the drum by means of a pair of heavily weighted levers *R*. The cross-section of the completed tire indicates the manner in which the rubber is forced into the grooved rim and shows the gradual elimination of the deep ridges as each layer of rubber is applied.

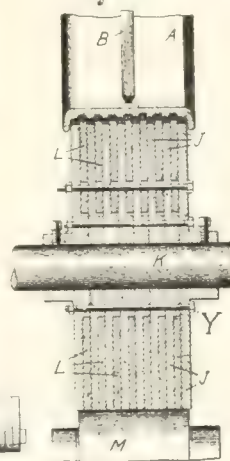
HYDRAULIC PRESS FOR RUBBER SCRAP.

The hydraulic press illustrated herewith, and which was only recently brought out in this form, is being used by a number of manufacturers for pressing crude scrap rubber into slabs for



MACHINE FOR SLABBING SCRAP RUBBER.

convenience in handling and storing. This press is operated by a hydraulic plunger which is actuated either by an accumulator or from a single pump installation. The



apparatus is of the upward pressure type, the plunger having a working pressure of 1,000 pounds, with a travel of 13 inches. A track running through the press between the frame members carries two steel mold boxes which receive the crude rubber and carry it into the press. One box is always in position for unloading and refilling while the other is under pressure. This saves time and labor and makes the operation a continuous one. One side and end of each mold box are provided with hinges which permit the boxes to be opened for removal of the pressed rubber. The pressure head is machined to fit the boxes, which are 22 inches wide, 26 inches long and 13 inches deep. When pressure is applied, the box with the crude rubber is forced upward and

over the pressure head, and the rubber is pressed into a slab in the bottom of the box. The machine is fitted with the usual hydraulic gages and valves for controlling and registering the pressure. The apparatus is constructed of steel throughout, which adapts it for long and hard service. [The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio.]

RUBBER ROLLS FOR TANNING.

An improvement has been made in the rubber rolls used for tanning by the introduction of one or more layers of tough rubber over the layers of softer resilient rubber. This tough rubber resists the influence of grease and oil, without affecting the resiliency of the rubber covering of the rolls. [Felten & Guillaume, Mülheim-on-Rhine.]

A SUCTION ATTACHMENT FOR PUNCH PRESSES.

An interesting device shown at the recent Safety and Sanitation exhibition was a suction attachment for punch presses used for picking up sheet metal to be fed to press, this method naturally being safer than the former practice of hand feeding.



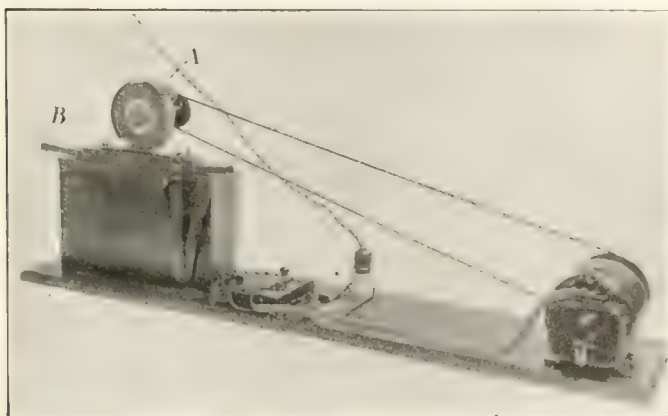
DEVICE FOR PICKING UP SHEET METAL.

The actual "picking" is effected through means of a rubber disc deriving its suction from a vacuum pump to which it is attached. [Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.]

BUFFING WHEEL FOR RUBBER.

In testing cotton rubber-lined fire hose, the backing, which is used to cement the lining to the fabric, if not removed, affects to a greater or less extent the values obtained for tensile strength and recovery. The more usual method is to remove the backing by means of an emery wheel, and the operation as commonly performed requires considerable care and skill to prevent injury to the rubber.

The buffing wheel shown in the accompanying illustration has been especially designed at the National Bureau of Standards



BUFFING WHEEL.

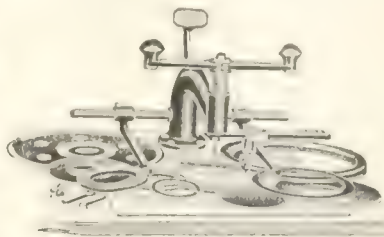
for the purpose of buffing rubber and is giving excellent results.

The wheel is operated by a $\frac{1}{2}$ horsepower motor. The rubber to be buffed is clamped, as shown, to a carriage which is moved back and forth under the 5 inch x 1 inch emery wheel (No. 60) running at about 3,000 revolutions per minute. The central portion of the carriage just under the rubber is slightly raised, by which means it has been found that the operation is more easily performed and with less danger of injury to the rubber. The thumb screw marked "A" serves to lower the wheel by very small amounts as the buffing proceeds. The shields marked "B" are for the purpose of keeping the fine particles of rubber off of the guide. The starting box, tho not necessary, is desirable in bringing the wheel gradually up to full speed.

A MACHINE FOR CUTTING RUBBER GASKETS.

If a man prefers, he can take a pair of compasses—or the bottom of a tin can, for that matter—draw a circle on a sheet

of rubber and cut a gasket out with a pair of shears; but he can do it much more expeditiously and accurately by using the Springfield circle cutter illustrated here. This is a simple machine, weighing only about 12 pounds, and can



be used on any flat table. The double clamp holds the sheet of rubber, or whatever the material may be, firmly in its place, and a revolving arm cuts out the circle of the desired size. This arm has a graduated scale, so that the radius of the circle may be accurately gauged. This radius may be anything from $\frac{1}{8}$ of an inch to 14 inches. There is a tool carrier, arranged to hold various different tools. The machine is quite inexpensive. [The Shawver Co., Springfield, Ohio.]

WRAPS TIRES IN HALF A MINUTE.

The constant progress being made in the rubber industry is indicated by the continual introduction of new machinery. One manufacturer has placed on the market a new machine which wraps the paper tape protecting cover on a tire in 30 seconds. This machine is driven by belt from an electric motor mounted on the back of the cast iron stand. The roll of paper tape is carried around the tire by an annular steel ring while the tire is revolved at right angles to the ring. Both the tire and the ring are actuated by friction rollers which provide sufficient pressure to give a positive drive without slipping. The machine is controlled by a foot lever, which leaves the operator's hands free to open the ring and remove the tire the instant the power is shut off.

Very little floor space is required for the stand and only a small-powered motor is needed to operate the winding mechanism. [Chas. E. Miller, Anderson, Indiana.]

**A NEW HILL-STAGE VULCANIZER.**

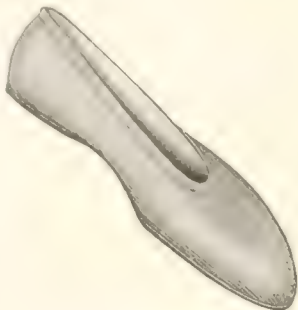
For the public garage operator this new vulcanizer is particularly adapted, since it has a capacity of five casings, five inner tubes, one motorcycle tire and two bicycle tires at a single heating. It will take tires up to 5 inches in size, or the tubes of any size may be accommodated. This is a steam vulcanizer, being equipped with a jacketed boiler of large capacity and with either a gas or gasoline burner. The outfit weighs, complete, ready for shipment, 675 pounds. [The Hill-Stage Co., Anderson, Indiana.]



New Rubber Goods in the Market.

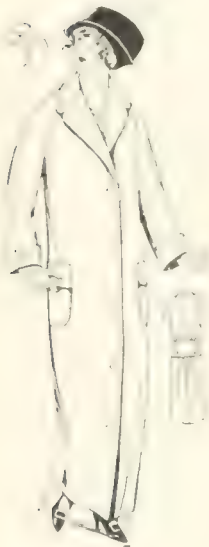
A NEW SHOE FOR BATHERS.

THOSE people who are wont to complain that rubber is not the same now as in the days of our fathers will be relieved to know that a brand new shoe is now being marketed and will be ready for the retail trade early next summer. It is a Hub-Mark bathing shoe. The accompanying cut shows that it has no laces but is finished with an elastic stockinette top that makes it fit snugly over the foot. It is very light in weight and yet affords ample protection against pebbles, shells and other disagreeable objects that make barefoot bathing sometimes anything but enjoyable. The shoe is packed in cartons and is made in either white or black and in sizes from children's 4's to men's 11's. [Boston Rubber Shoe Co., Boston.]



GUARANTEED RAINCOATS.

The absence of a manufacturer's guarantee does not indicate that the article so offered is lacking in genuine merit, this feature being frequently so apparent as to call for no special endorsement. But the fact remains that in the minds of many purchasers a guarantee of lasting quality adds greatly to the desirability of the article; and that this feeling of security may be enjoyed by purchasers of raincoats a line of these garments, in various styles, has been produced under a guarantee by the manufacturer that the rubber coating will not crack, peel or soften for three years. The cut herewith shows one of the latest styles in these raincoats, a Balmacaan model, with or without the belt, made of single texture Scotch mixture, in tans and grays, with all seams cemented and stitched. [Sanborn Manufacturing Co., 151-155 West Twenty-fifth street, New York.]



NATURE'S ASSISTANT.

An invention, the offices of which will no doubt be suggested by reference to the accompanying cut, has recently been placed on the market. By an ingenious arrangement, a hard rubber tube—various sizes of which are provided—is attached to an ordinary water bag, the flow of the liquid which it contains being regulated by means of an automatic ball valve within the tube. [Williams Douche and Water Bag Co., Vinita, Oklahoma.]

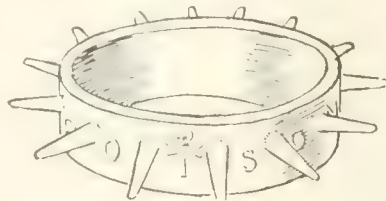


WATERPROOF COVERS FOR AUTO SEATS.

Most automobile owners find it to their advantage to protect the leather upholstery of their cars by the use of waterproof covers, and to meet the ever-increasing demand an especially desirable rubber interlined double waterproof cloth cover is now being offered the trade, at a very moderate price, by the Perkins-Campbell Co., of Cincinnati, Ohio.

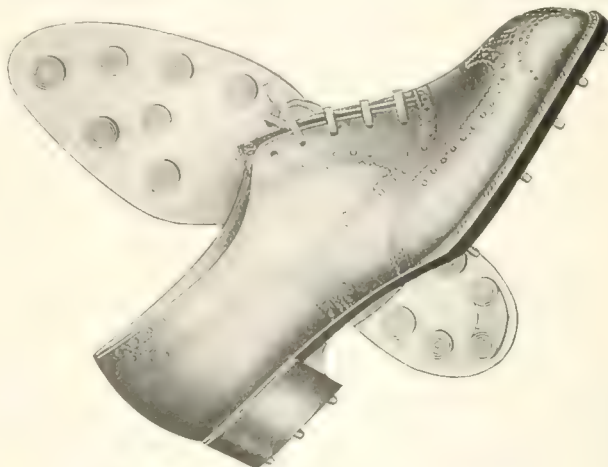
PROTECTION AGAINST ACCIDENTAL POISONING.

The many fatalities resulting from mistaking bottles containing poison for those which contain medicines of curative properties have led to numerous suggestions whereby a recurrence of such accidents may be avoided. One of these, which would seem to be well adapted to serve this purpose, is here shown. It consists of a pronged rubber band, which goes around the neck of the bottle, the letters composing the word poison alternating with the prongs. A recent enactment requires that such a device be adapted to the neck of every bottle containing poison dispensed in the city of Atlanta, Georgia.



A LATE DESIGN IN GOLF SHOES.

The accompanying cut, which shows a tan Russia calf oxford with wing tip and decorative perforations, illustrates a late design in golf shoes. The side view shows the steel studs which espe-



Courtesy of "Shoe & Leather Reporter," Boston.

GOLF SHOE WITH RUBBER PLUGS.

cially adapt this shoe for use on the golf links, and the flat sole view shows an alternative arrangement of rubber plugs which make it equally suitable for use in the club house or where the unprotected steel projections would injure the floors.

THE "PULLASTIC" BANDEAU.

Bandeaux and hat linings are now produced which may be adjusted to fit any head and which enable the wearer to dispense with hatpins. They are said to give perfect poise to the hat, without disarranging the hair, and to be extremely comfortable. The adjustment is effected by the use of an elastic band, which acts as a draw string in a bandeau or lining of soft material, slipping down over the head and capable of being instantly shortened or released to the desired circumference. [Pullastic, 66, Ludgate Hill, London, E. C., England.]

LEATHER-FACED INSULATING GLOVES.

Plain rubber insulating gloves have long been in use by those engaged in electrical work, but the leather-faced rubber glove is a comparatively new idea. The leather facing adds to the life of the article, while in no way detracting from its effectiveness. Gloves embodying this idea are included in the output of the St. Helens Cable & Rubber Co., Limited, Warrington, England.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

RECLAIMED RUBBER

UNDER the title of "Reclaimed Rubber vs. Plantation Rubber," Mr. Maclaren, who is a director of several rubber plantation companies, contributed a lengthy and interesting article to the "India Rubber Journal," of February 7. No doubt many of my readers have seen it, and I shall not attempt to refer to it here in detail. I should, however, like to say that opinions expressed in my presence are by no means unanimous as to his figures and general deductions. His estimate that the amount of rubber in the reclaimed manufacture is equivalent to about 56,000 tons is considered by some as too low, 80,000 tons being suggested as nearer the mark.

Reclaimers do not regard the future with much apprehension. Old rubber, they contend, will always be collected as old iron always has been, whatever the market price may be. Again, the greater the amount of new rubber used, the greater will be the tonnage of scrap collected; and as regards the selling price of reclaimed, it is pointed out that prices will conform to the market price of raw rubber and scrap. Thus motor tires, which not long ago cost £40 per ton, are now being bought at £18 to £20 per ton, and the selling price of reclaimed has been reduced accordingly. Probably because the total amount produced is small, Mr. Maclaren does not refer to certain brands of reclaimed rubber which correspond very closely to new raw rubber, having been derived from unvulcanized scrap, as also from scrap containing only one or two per cent. of mineral and slightly vulcanized.

If what I hear is correct a prominent reclaiming firm in England is contemplating the erection of additional works at another place in the country, which hardly looks as if it expected an early collapse of its business. Other firms report a steady business, though they are not as busy as they have been. Although motor tires have fallen in price, other classes of scrap show practically no reduction, this applying especially to reds, grays and cab tires, these last still coming on the market in spite of the growth of the taxicab in all large towns.

ANALYSIS OF RUBBER INSULATION.

The preliminary report of the joint rubber insulation committee, appointed by American manufacturers and users, is of special interest to rubber analysts generally, and I may perhaps be afforded space to make one or two observations thereon. It must not be overlooked that the carefully defined details of analytical work have for their main object the determination as to whether or no the sample under analysis conforms to a specified quality. There are certain limits given for the acetone, chloroform and potash extractions, etc., and if these limits are exceeded, the sample is presumably condemned. This sort of work is always simpler than stating the actual composition of an unknown sample. At the same time those who are frequently confronted with the latter work, or rather problem, will no doubt find the new analytical scheme a decided aid in their labors. Perhaps in the case of those firms to which these specifications apply the time occupied in analysis is of no great moment, but for factory use, or for the ordinary consultant, a string of processes, each taking up many hours, is rather a serious matter. A rubber analysis which occupies three days is apt to defeat its main objective except in legal cases, or where large and important contracts are concerned.

It is interesting to note that the old method of estimating the rubber by difference is adhered to, the various direct methods being evidently considered insufficiently reliable. The difficult problem of getting at the amount of asphaltic bodies has been tackled to a limited extent. Extraction with chloroform, after

the acetone extraction, is the procedure adopted, though this is only meant to show the absence of asphalt, and does not claim to give its exact quantity if present. A small amount of extract is allowed as the chloroform is known to dissolve some rubber. The inaccuracy of all these extraction methods for asphalt pitch or mineral rubber lies in the fact that a considerable and variable proportion is always dissolved out by the acetone, and unless allowance is made the figure obtained by the asphalt solvent used later on is always too low. For the determination of mineral matter ashing the sample is not recommended, solution of the rubber and filtration off of the sediment being the specified procedure. No doubt where time is no object this is the better method, and in certain cases the only method which can be adopted with any pretense to accuracy. The more rapid ashing method, however, can, in capable hands at any rate, for many rubber compounds be made to give sufficiently accurate results, and it will still continue, I imagine, in general use. By the qualifying clause, "capable hands," I mean one who has a sufficient knowledge of rubber manufacture to enable him to apply certain necessary corrections to the figures obtained.

Another, and a long standing problem, of rubber analysis is left unsolved; that is the determination of lampblack. In the present scheme carbon is to be tested for by the presence of a black color on treatment with nitric acid, but the test is not put forward as a quantitative one. Special attention is drawn to the preparation of the sample for analysis. This is a more important matter than is generally supposed, and the recommendation to pass all the material through a definite mesh sieve before analysis is a procedure which should be generally followed.

FINE HARD FROM EASTERN PLANTATIONS.

More trouble seems in store for Brazilian finances—that is, supposing that the Wickham Hard Cure Process comes up to the confident anticipations of the promoters of the company which is now engaged in exploiting it. I have not been fortunate enough yet to obtain a sample of the smoked rubber, but from what I have heard there is not exactly a unanimous opinion among manufacturers as to the equality of this rubber with Brazilian Hard Cure. Moreover the suggestion has been made in certain quarters that Mr. Wickham, who is universally respected, has lent his name and influence rather too readily to the city element. Presumably the patent is a sound one, though, as the treatment of rubber latex with wood smoke is of course well known, the novelty must lie in the particular mechanical contrivance for carrying it into effect.

Briefly described the Wickham machine consists of a vertical disc with a flange three or four inches wide, the liquid latex being allowed to drip on the interior of the flange at a uniform rate. The disc is revolved at about 90 revolutions per minute, the centrifugal action causing the latex to spread, and carrying it in a thin film round the interior of the flange, to where a jet of hot smoke is allowed to impinge upon it. The resulting effect is a continuous process of curing in the Amazonian fashion, superimposed thin films of rubber being formed. When a thick enough film has been formed it is removed and pressed for transport. *Prima facie*, this process, which is quite distinct from the Byrne patent process of smoking the already coagulated latex, should give rubber equal to the Brazilian—always supposing that the actual composition of the latex from the youthful eastern trees is identical with that yielded by trees of far greater age. Personally I am not at all satisfied that the latices are similar, and if they are not I imagine that it is

asking far too much of the creosote in the smoke to rectify the deficiency in the plantation output. As samples of the Wickham rubber are stated to have been sold at 8d. per pound higher than first grade crêpe, any misgivings I may have may easily be proved to have no foundation, and I shall await developments with interest, the matter being of course of the first importance to the planting industry.

RUBBER MANUFACTURING DISASTERS.

After Hopkinson & Co.—Gorton; after Gorton—the Sirdar Rubber Co., Limited. This is rather a tale of woe to have to record within such a brief period, and it might be usefully taken to heart by those plantation shareholders who a few months back were writing to the press about the huge profits being made by rubber manufacturers generally. All the above and other firms to a less disastrous extent were severely hit by the rubber boom of 1910, though no doubt other adverse factors have been at work. Much sympathy will be felt for Mr. J. M. MacLulich, the moving spirit of the Sirdar company, a concern which he formed in 1906 at Limpley Stoke, near Bath, to make the Sirdar tires, which had since 1898 been made by other works for the Sirdar company. The works at Limpley Stoke, at one time occupied by Messrs. Wallington, Weston & Co., were soon found to be too small for the Sirdar Rubber Co., and a move was made to Bradford-on-Avon, not many miles away, where the Spencer Moulton Rubber Works had long been established. The latter firm, though still specializing in railway buffers, has recently entered the tire business, in which it has made great progress. The liabilities of the Sirdar company are stated to be £29,300, the loss for 1913 being £3,300.

CEYLON AT THE LONDON RUBBER EXHIBITION.

According to Ceylon advices, that island will be worthily represented at the London Rubber Exhibition. The Ceylon Court will be situated next the entrance and opposite the Brazilian stand, occupying a space of 67 x 40 feet. Efforts are being made in Ceylon to encourage planters to come forward with exhibits, not only of rubber but also of fibers and other articles within the scope of the exhibition.

ENGLISH EXPORTS OF WATERPROOFED APPAREL.

According to statistical returns, the total exports of English waterproofed apparel have increased from the equivalent of \$3,045,000 in 1911 to \$5,108,778 in 1913. In the last named year Canada was the largest single customer, taking \$1,410,715 or about 28 per cent. France took 2 per cent.; British South Africa, 3½ per cent.; British East Indies, 2½ per cent.; Australia, 4 per cent., and New Zealand, 3¼ per cent. The remaining 56¾ per cent. was distributed among other countries.

CAPITAL OF ENGLISH PLANTATION COMPANIES.

According to recent statistics the total capital invested in English plantation companies equals \$314,791,250. The dates of establishment were as follows:

1908.....	\$10,052,500
1909.....	60,040,000
1910.....	194,207,500
1911.....	33,095,000
1912.....	10,682,500
1913.....	6,713,750

Total\$314,791,250

In 1913 the new capital as shown belonged to 19 companies, four of the most important of which represented about one-half of the total. Their geographical distribution was as follows:

Malayan Peninsula, 9; Sumatra, 3; Ceylon, 2; British North Borneo, 1; Africa, 3; India, 1.

HENLEY'S PAY GOOD DIVIDEND.

The report of W. T. Henley's Telegraph Works Co., Limited, London, for 1913 shows that the 15 per cent. dividend, which

has been paid since 1909, has now been supplemented by a bonus representing 5 per cent. The increased profit thus distributed has been due to the manufacture of golf balls, particularly of the company's specialty, the "Why Not?" ball. During the years 1909 to 1913, in addition to the above liberal dividend, an amount equaling \$250,000 has been added to the reserve fund. A sum of nearly \$300,000 has been now carried forward to new account.

PROPOSED LONDON RUBBER WAREHOUSE.

The first draft of a scheme for a limited company has been issued in London for the erection of a modern rubber warehouse, and for carrying on rubber warehouse business. An option has been obtained on a plot of 5½ acres, near the Victoria and Albert docks, at a price of \$175,000, while a suitable warehouse could be built and equipped for \$287,500. Such a warehouse could accommodate 20,000 tons a year, leaving a surplus space of 50,000 square feet for renting or for additional warehousing.

NEW RUBBER WASHING WORKS.

Economic Rubber Machines, Limited, is the style of a company about to undertake the washing, crêping and drying of rubber on an important scale at a new plant, Copperfield road, Stepney, London, E.

STOCKS OF LOW GRADE RUBBER.

An English statistical return shows that the combined stocks of all kinds of rubber at London and Liverpool have risen from 4,538 tons at the end of January, 1913, to 6,196 tons at the corresponding period of 1914. This increase of 1,658 tons is considered relatively small in view of the rapid growth of Eastern supplies. Moreover, the increase includes some 500 tons of inferior grade rubber of doubtful sale, as shown below:

	January 31, 1913. Tons.	January 31, 1914. Tons.
Borneo	138	214
Mozambique	168	238
African	332	390
Peruvian	200	270
Maniçoba, Ceara, etc.....	230	463
Total	1,068	1,575

EDINBURGH HOSPITAL GETS GIFT OF RUBBER FLOORING.

At a recent meeting of the managers of the Edinburgh Royal Infirmary an offer was received from the Rubber Growers' Association to supply, free of charge, 600 square yards of rubber flooring to the institution. The flooring would be manufactured and laid down by a local firm.

SCOTTISH MOTOR EXHIBITION.

This exhibition, which was recently held at Edinburgh, had about ninety exhibitors, of whom about fifteen were makers of tires. Special notice was attracted by the exhibit of the North British Rubber Co., Ltd., their stand having been specially designed for the occasion.

CLYDE RUBBER WORKS REMOVED TO RENFREW.

The Clyde Rubber Works Co., Ltd., announces its removal from Glasgow to Renfrew, a short distance from the first named city. With a view to meeting requirements, the works have been specially erected and are equipped with an up-to-date plant driven by electricity. These increased facilities place the company in a position to promptly meet the increased demands for its products.

RUBBER EAR PROTECTOR.

An invention patented in Germany consists of a hollow body of rubber, extensible by internal mechanical pressure so that the channel of the ear can be quickly closed and re-opened. This is doubtless intended to protect the ear from the concussion of explosions.

Some Rubber Interests in Europe.

BRAZILIAN COMMERCIAL MUSEUM IN PARIS.

THE new Brazilian Commercial Museum, lately opened in Paris, is situated in the center of the city, at 101 rue Saint-Honoré, within a stone's throw of the Louvre and the Tuileries gardens. It is located on the premises of the Brazilian Information Bureau. In the exhibits the various sections of the natural wealth of Brazil are included—such as coffee, rubber, maté, sugar, cocoa and cotton.

Rubber, as occupying the second place among Brazilian exports, is fully represented by samples of the product in the form of biscuits and balls. The exhibit comprises the principal varieties of rubber known in Brazil, as well as slips for planting purposes. A collection of photographs illustrates all the steps in gathering rubber.

Dr. Delfim Carlos B. da Silva, aided by an efficient staff, has the direction of the new museum. A circular shows the rise of Brazilian rubber exports from 31,717 tons in 1903 to 42,286 tons in 1912.

NEW FRENCH FROTH RUBBER CO.

A company has been formed in Paris to work the Pflaumer patent for the manufacture of "Caoutchouc Mousse" (froth rubber), from rubber, gutta percha and balata, vulcanized by heat. The capital equals \$1,200,000.

FRENCH COLONIAL EXHIBITION IN 1916.

It is proposed to hold an exhibition at Marseilles in 1916 representing French colonial interests. The prominent officials are: M. Loisy, director of the cabinet of the French Colonial Ministry and M. Jacques Marlio, his assistant.

BORDEAUX RUBBER MARKET IN 1913.

Bordeaux rubber imports fell from 1,365 tons in 1912 to 914 tons in 1913, the reduction being caused by the fall in prices which led to many importers ceasing operations at the sources of supply. It will require an improved range of values in Europe to revive trade with French Africa. The rubber passing through the Bordeaux market in 1913 did not display any improvement in quality, there being, moreover, a lack of uniformity. The imports of balata, however, showed an increase from 8 tons to 75 tons, prices having been relatively high and steady.

HOT AIR VULCANIZER INVENTED BY MR. BOBET.

In the February issue of THE INDIA RUBBER WORLD there was an illustrated description of a new hot air vulcanizer being used quite extensively in repair shops in France. This apparatus is the invention of Mr. René Bobet, a frequent contributor to these columns.

LARGE PROFITS OF BERGOUNGAN COMPANY.

The net profits made by the Bergougnan concern, of Clermont-Ferrand (France), for 1913 equal over \$1,000,000. Of this amount \$100,000 has gone to a special reserve fund, to provide against fluctuations in the price of rubber.

BOTANICAL SERVICE IN TUNIS.

A botanical service has been officially established in Tunis to be carried on under the direction and control of the French Director General of Agriculture. Its objects will include the study and propagation of plants and trees of interest to the inhabitants of Tunis.

PIRELLI & CO.'S NEW SPANISH FACTORIES.

Messrs. Pirelli & Co., of Milan, have acquired a large site adjoining their Spanish branch electric cable works at Villanueva y Giltru. Two large buildings are being erected, with a total floor space of about 60,000 square feet. One of these is

intended for the production of rubber goods, and the other for making telephone cables.

NEW BOHEMIAN RUBBER GOODS FACTORY.

Under the style of Maximilian Rost, a limited company has been registered at Bodenbach, Bohemia, for the production and sale of elastic rubber goods, braces and bandages.

MICHELINS FORM BELGIAN COMPANY.

A company styled "La Société Belge du Pneumatique Michelin" has been formed, with a capital equaling \$60,000, at St.-Josse-ten-Noode, near Brussels.

INCREASED DANISH IMPORTS OF TIRES.

The total quantities of pneumatic tires, covers and tubes imported by Denmark were: 1910, 365 tons; 1911, 404 tons; 1912, 461 tons.

NEW HUNGARIAN AIRSHIP FACTORY.

The Danubius factory and the Manfred Weiss Co., both of Budapest, have combined in erecting a new airship plant. Orders for 18 airships have been received from the Austrian government.

GOOD DIVIDEND OF AUSTRIAN RUBBER FACTORY.

At the recent general meeting at Vienna of the Ungarische Gummiabrik (Hungarian Rubber Factory) a dividend was declared of 16½ per cent., being at the same rate as in the previous year.

METZELER & CO. OPEN VIENNA BRANCH.

An Austrian company has been registered for the manufacture and sale of rubber goods by Metzeler & Co., Munich, in the name of their Vienna branch. The capital equals \$700,000.

MR. HARNESS JOINS PROWODNIK FORCES.

Albert Harness, formerly Manchester district manager for the Continental Tire & Rubber Co., is reported to have severed his connection with that company, to take a position with the Russian firm of Prowodniks, of Riga, being appointed managing director of the Indian Columb Tire Co., Calcutta.

EUROPEAN STATISTICS OF CRUDE RUBBER.

ENGLAND.—Imports for 1913 amounted to 55,270 tons, and deliveries to 52,854 tons. Stock on December 31, 1913, was 5,985 tons.

For the month of January, 1914, imports into London of plantation rubber were 3,911 tons, and deliveries 3,384 tons; demand thus evidently keeping pace with supply. The respective quantities for January, 1913, were 1,337 and 1,280 tons, the plantation rubber business having thus apparently grown three-fold during the year.

During January, 1914, Liverpool imported 1,304 tons of rubber, and delivered 1,644 tons, in comparison with 1,578 and 1,793 tons in January, 1913.

FRANCE.—Imports for 11 months ending November were: 1912, 20,905 tons; 1913, 19,338 tons. Exports for that period were respectively, 14,966 and 13,999 tons.

GERMANY.—For the twelve months of 1913 imports represented 20,497 tons, and exports 3,972 tons, against 20,586 and 4,943 in 1912.

Out of a total of 469 splash-guards recently submitted, the municipality of Paris has not been able to select any style which is fully effective, altho several were designated as promising, fairly useful, durable and cheap, and the prefect of police has been called upon to make the use of the splash-guard obligatory.

GERMAN VIEW OF THE RUBBER SITUATION.

In their review of 1913 Messrs. Walther & Löhmann, of Hamburg, remark that when the Brazilians have learnt that even without the most expensive silk goods, the best umbrellas and the finest gramophones, life is still bearable, they will become accustomed to the lower level of prices. In most countries of production the natives will gradually become accustomed to the prices obtainable and production will be resumed when they see they cannot get more for their rubber. Only those districts will definitely abandon rubber gathering where new forms of commercial activity have been discovered. In certain regions there is, moreover, the possibility of an increased production.

The opinion is expressed that as the fall in price has resulted from the production of the East Asiatic plantations, the reaction has to be expected from that quarter. Many of the costs of production as estimated are really applicable to only a few plantations. With respect to estimates of future production, it is remarked that caution should be exercised in considering the reports of the companies started under abnormal circumstances in 1910, and which in many cases are not likely to prove successful. Some estimates even show a reversal of the current in 1918.

The following estimate is presented of the world's production and consumption:

	Production	Consumption
1908-09	tons 70,587	71,989
1909-10	76,553	76,026
1910-11	79,305	74,082
1911-12	93,669	99,564
1912-13	126,302	121,280

GERMAN CRUDE RUBBER STATISTICS.

German crude rubber imports receded from about 20,580 tons in 1912 to 20,490 in 1913. This slight reduction in quantity was coupled with a fall in value from the equivalent of \$40,500,000 to \$23,250,000, or about 40 per cent. German manufacturers have largely given away these advantages in price, in the form of reduced quotations for their products. Makers and dealers both prefer a medium range of values to specially low prices without permanence.

GERMAN MOTOR VEHICLE EXPORTS.

Statistics indicate the German exports of automobiles for 1913 as equaling \$17,750,000 against \$16,250,000 in 1912. Motor trucks showed a better percentage of increase, with \$3,250,000 for 1913 in contrast to \$1,875,000 in 1912. Motor cycles represented in 1913 \$625,000, about the same as in 1912.

Exports of dirigible air craft in 1913 equaled \$334,250 against \$229,500 for 1912.

German manufacturers exported tubes, tires and treads to the extent of \$11,250,000 in 1913, while other motor vehicle accessories represented \$12,000,000 to \$15,000,000.

REPORTED NEW EBONITE CONCERN.

The proposed establishment of an important concern for the manufacture of ebonite by a patented process is reported from Wörringen, near Cologne. It is said that 1,500 hands will be employed.

THE GERMAN AUTOMOBILE INDUSTRY IN 1913.

The exports of motor cars from Germany increased in value from \$17,500,000 in 1912 to \$23,750,000 in 1913. As this increase took place at a time when various countries were making extensive military preparations—in case of possible war—the growth of this export business is attributed by some to the more extensive adoption of motor vehicles for army purposes.

CONTINENTAL CAOUTCHOUC AND GUTTA PERCHA.

The Continental Caoutchouc & Gutta Percha Co., of Hanover, Germany, has declared a yearly dividend of 50 per cent. on its stock, including the \$750,000 new stock issued about six months ago. This company has recently commenced the erection of a new administrative building at Hanover. It will have 4 stories and will cover an area of about 35,000 square feet. Professor Peter Behrens is the architect.

German reports state that the balloon "Duisburg," in which the aviator Kaulen lately accomplished a record flight from Bitterfeld to Perm (Russia), was covered with "Continental" balloon material made by this concern.

DUNLOP CO. EXTENDING IN GERMANY.

The steadily increasing favor of the Dunlop tire in Germany has necessitated the enlargement of the plant at Hanau-on-Main. It is stated that the surface to be covered by the new buildings equals about 65,000 square feet, which area constitutes an important addition to the present factory.

GERMAN COMMERCIAL STATISTICS.

Statistics of German commerce for the year 1913 show that exports of old rubber shoes through the port of Hamburg fell off to the extent of about \$50,000. Imports of American cotton showed a decrease of about 50,000 tons, and American rubber shoe imports dropped from 192.6 tons in 1912 to 5.2 tons in 1913. American rubber shoes entering Germany pay the general duty of 100 marks (\$23.80) per 220 pounds, while competing lines are charged the conventional rate of 80 marks (\$19.04) per 220 lbs.

Exports from this consular district to the United States included for 1912 and 1913 manufactures of india rubber and gutta percha to the value of \$297,379, and \$296,445, respectively; crude rubber worth \$7,038,930 and \$3,920,395; crude gutta percha valued at \$148,676 and \$121,703, and waste rubber amounting to \$82,857 and \$25,784.

VALUE OF RUBBER GOODS IMPORTED INTO GERMANY.

German statistics show the value of the importations of rubber manufactured goods into that country for the last three years as follows: 1911, \$6,625,750; 1912, \$6,849,250; 1913, \$6,600,750. While imports thus show a falling off, exports increased from \$30,127,750 in 1912 to \$32,070,000 in 1913.

Rubber heels are said to be very popular in Switzerland, with German manufacturers particularly successful in competing for this trade, the demand being principally for a style and quality which retails at 16 cents per pair. The Swiss import duty on rubber heels is at the rate of 40 francs per quintal, or 3½ cents per pound gross weight.

A new building is being erected in Berlin in which to hold the International Automobile Show, scheduled to open early in October of this year. Exhibits will be limited to passenger and pleasure cars, with their parts, accessories, etc., and will include no commercial vehicles. Applications for space must be addressed to the Verein Deutscher Motorfahrzeug-Industrieller, E. V., Unter den Linden 12, Berlin, W. 8.

NEW ZEALAND IMPORTS OF RUBBER GOODS.

Official statistics show the following New Zealand imports for the years 1911 and 1912:

	1911	1912
Belting other than leather....	\$170,000	\$155,000
Engine packing	80,000	100,000
Other rubber goods	50,000	80,000
	\$300,000	\$335,000

The proportions in 1912 were from: England, 60 per cent.; Australia, 20 per cent.; United States, 3 per cent.; other countries, 17 per cent.

RITTER, RITTER & CO.'S REVIEW AND FORECAST.

IN a lengthy report Messrs. Ritter, Ritter & Co., of London, deal with the features of the eventful year 1913, with its fluctuations in the prices of rubber, all of which have passed into history.

Of more special interest is their forecast of 1914.

While the figures shown for the production and consumption of 1913 (114,020 and 104,700 tons) differ somewhat from other estimates, they are sufficiently close to afford a basis of comparison. There is, however, a wide discrepancy between the grand totals of visible supply on December 1, 1912 and 1913, which were respectively 16,080 and 24,935 tons. In any calculations for 1914 this last named factor has to be considered.

Messrs. Ritter, on the ground that the prices even as they stand for plantation rubber will induce the companies to force tapping, consider the recent estimate of 65—70,000 tons plantation rubber for 1914 as misleading, placing it at the Akers estimate of 84,250 tons, following up the 50,000 tons reported for 1913. This makes a total estimate for 1914 of:

	Tons.
Plantation	85— 90,000
Mediums, etc.....	25— 25,000
Pará and Caucho.....	35— 40,000
	145—155,000
Adding visible supply on Jan. 1, 1914..	25— 25,000
About	170—180,000

which consumption will be asked to absorb. Against this the world's consumption, on basis of a 10 per cent. advance on 1913, will only make about 115,000 tons.

Such is the problem before the trade! The factor open to discussion is the possible excess over the lower estimate of the actual shipments of plantation rubber this year. In fact, on the basis of the progressively increased yield of older trees, the prospective quantity of plantation rubber for 1914 is shown as 90,750 tons. The opinion is expressed that an enormous over-production is now in progress. Messrs. Ritter ask "What will become of the surplus of about 55—65,000 tons, and at what prices will it be taken up? Will it be possible to increase consumption by adding a larger percentage of actual rubber to the compositions of manufactured goods? Will the manufacture of new articles expand consumption materially? It is at present impossible to foresee any new outlets for the above surplus. . . . There remains only the question as to how far prices must be lowered to effect its realization and to place the position on a sound basis."

Messrs. Ritter point out that their forecast of March, 1913, of 2s. 6d.—3s. (60.81—72.98c.) for plantation rubber during the fall, though objected to at the time it was made, was more than justified by subsequent events.

As to the crucial point of the cost of production the following opinion is expressed as to the future:

"It must not be forgotten that the present level of costs . . . can be reduced still further to a considerable extent and will ultimately range about 6—7 pence (12.16—14.19c.) per pound. An ultimate selling price of 8—9d. (16.21—18.24c.) per pound, therefore, appears unavoidable. . . . Do the plantation companies seriously expect that the present inflated price level of about 2s. 5d.—2s. 6d. (58.79—60.81c.) will be kept up?"

These opinions are quoted as illustrating possibly extreme views, but none the less of interest.

There is said to be considerable demand in India for hose supporters, the rubber in this article wearing out very quickly under conditions of climate which prevail there.

RUBBER GROWERS' ASSOCIATION.

THE meeting of the Rubber Growers' Association, held in London on February 19, was of special interest, as it enabled the officials to concisely explain the recent features of the rubber market. Chief interest naturally attached to the explanations regarding plantation rubber in the review of the situation by Mr. Noel Trotter, the chairman.

While 1910 will be memorable for the rubber boom, so will 1913 be associated with the great slump, which brought down standard crêpe from 4s. 8d. (113.52c.) to 1s. 10½d. (45.61c.); though it subsequently recovered to 2s. 3d. (54.73c.). This drop led to the formulation of a number of schemes for immediately re-establishing the price of the raw material; including a "central selling agency," or in other words, a plan of collective bargaining. Mr. Trotter expressed the opinion that such a system is inapplicable to the rubber industry as it now exists, with its chief markets so widely separated as they are. Hard fine Pará opened in 1913 at 4s. 7½d. (112.51c.) per pound, closing at the end of the year at 3s. 1½d. (76.02c.) per pound.

The world's total production is estimated at 112,000 tons against 98,950 tons in 1912; consumption having been, respectively, 106,000 and 99,000 tons.

In proof of the excellent quality of plantation is the fact that the production for 1912—28,500 tons, and of 1913—47,000 tons, all went straight into consumption. Messrs. Clayton, Beadle & Stevens, the consulting chemists of the association, had reported plantation as being chemically identical with fine hard. No chemical tests can distinguish between these rubbers when manufactured and they equally withstand the most vigorous stretching and other physical tests.

In September there was a difference in price between the two of 1s. 6d. (36.49c.) per pound. This difference had been reduced by the end of the year to about 8d. (16.21c.) per pound, chiefly owing to the advanced value of plantation rubber. The lower price of plantation has drawn to it the attention of manufacturers accustomed to use Pará in the hope of its enabling them to hold their own with competitors using the Eastern product.

At the time of the fall in 1907-8, Pará had to bear the brunt of the decline; falling to 2s. 9d. (66.89c.) per pound.

STANDARDIZATION.

A strong committee of the association had devoted much time to collecting information on this subject and had recommended the establishment of an experimental factory in the United Kingdom in conjunction with a testing station. The report has had a mixed reception from manufacturers; the idea having been expressed that the gradual education of the plantations to what is required by the manufacturer and the establishment of a range of standards to which the plantations could work, would be preferable.

A fully equipped vulcanizing plant has been installed at Kuala Lumpur, available to planters for testing samples submitted. The matter will be further considered when replies are received from the various manufacturers.

QUALITY.

Owing to the greater care being exercised and the elimination of the tapping of immature trees an improvement has taken place in the preparation and quality of plantation rubber. With a view to further improvement a set of recommendations has been drawn up for the treatment of latex and curing of rubber, so as to ensure uniformity of product. The advantage of such a course is illustrated by the fact that certain manufacturers, for buying purposes, schedule various estates into groups according to the uniformity of quality and type of their rubber.

The London standard of quality for plantation rubber is accepted all over the world.

NEW USES FOR RUBBER.

The speaker also stated that new and larger uses for rubber

are being discovered and that the plantation industry is on a sounder foundation than it has ever been, while the outlook is very promising. Carefully prepared statistics put the world's production for 1914 at 120,000 tons, and granting the usual increase in consumption, the requirements should exceed that amount. He further referred to the competitions to be held at the approaching exhibition as to new uses for rubber.

COST.

The fall in value, Mr. Trotter says, was a blessing in disguise, by forcing such retrenchment as could only have been brought about in so short a time during a period of severe depression. These gains will far outweigh any temporary inconvenience from the low prices. Some Eastern managers have brought down local costs to 9d. (18.25c.) per pound, equal to 1s. (24.33c.) per pound "all in" (or delivered in London).

INSCRIPTION SALES AND AUCTIONS.

Mr. Trotter emphasized the opinion that the system of "inscription" sales as practiced in various Continental centers would be unworkable in London, while he added that some modification of the system of holding auctions fortnightly was necessary, in view of the increasing quantities continuously arriving.

LAND AND EXPORT TAX ON RUBBER.

The association had been in communication with the government of the Federated Malay States with a view to the reduction of the quit rent for rubber lands and the abolition or diminution of the 2½ per cent. *ad valorem* duty on exported rubber. Both these requests had been declined, but various other services had at times been rendered to the industry by the government named.

FREIGHTS AND LONDON WAREHOUSE CHARGES.

The chairman gave a full explanation of the circumstances under which rubber pays a freight of 66s. (about \$16) per 50 cubic feet, while tea, which requires much more care, is only subject to 30s. (or about \$7.30). He considered a well organized combination of all producers might achieve success, while he added that there were many and great difficulties in such a course. The excessive warehouse charges in London were criticized and the suggestion was made of establishing a central London warehouse for plantation rubber upon co-operative lines. Direct shipments from the East to the United States and the Continent are rapidly increasing, while the Panama canal will afford further facilities as to the latter market, the principal consumer of rubber.

COMBINATION.

Some discussion took place as to Mr. Trotter's statement that combination was inapplicable; in view of the fact that 286 companies representing 34,265 tons, estimated as representing more than 50 per cent. of the whole, had assented to the principle. Mr. Trotter explained that the report of his speech was the expression of his own personal opinion. Everybody was prepared to agree to the principle of combination, but as soon as an effort was made to apply it, it broke down. The report as presented by Mr. Trotter was ultimately adopted.

MR. BETHUNE ON STANDARDIZATION

During his recent visit to Ceylon, Mr. A. Bethune, chairman of the Rubber Growers' Association, stated that the evidence of British manufacturers was generally in favor of standardization, but that it was decided to postpone any definite decision until the views of American manufacturers had been obtained. The plan, if adopted, would cost an amount equal to \$100,000 and it was imperative to know, before the money was spent, that the scheme would receive the general support of all manufacturers.

DR. LYNE ON STANDARDIZATION

In addressing the "Tropical Agriculturist," Dr. R. N. Lyne, Director of Agriculture, Ceylon, remarks that while rubber can be produced in Ceylon more cheaply than in any other country in the world, it is necessary to give it the one quality it now lacks, namely, uniformity. The precise steps needed are being studied by the Department of Agriculture. He adds:

"Standardization can be effected either by all plantations adopting a set system of preparation proved to give the best results after vulcanization; or by their ceasing to manufacture rubber and confining their operations solely to the coagulation of latex, the subsequent preparation to be carried out in a few large central factories. . . . We don't suggest that co-operation need stop at preparation, but we believe the industry would be lifted to a different plane if it were adopted even to this extent. . . . It is thus that the dairy industries of the Dominion have been built up."

THE GOODRICH BRANCH IN JAPAN.

The B. F. Goodrich Co., of Akron, Ohio, in a letter to THE INDIA RUBBER WORLD under date of March 7, denies the report in circulation regarding the intention of the company to establish a branch manufacturing plant in Japan under the management of Gosaki Goto, who has been in Akron familiarizing himself with details of rubber goods manufacture. This company already has a general branch business in Japan, at 1 Yurakucho Itchome, Kojimachi-Ku, Tokyo, established about a year ago and in charge of A. P. Van Damm, where a full line of such of the Goodrich products as are salable in that country are carried, a complete corps of salesmen being engaged in their sale.

A NEW PACIFIC SOURCE OF RUBBER.

From Our Japanese Correspondent.

IN 27 degrees north latitude and 142 degrees east longitude lie the Ogasawara Islands; distant 530 nautical miles from Tokyo City. The group is composed of twenty small islands, with a total area of about eleven square miles. Tho situated in the temperate zone, they are traversed by the Japanese Current flowing from the South Sea. The islands are governed by the Prefecture of Tokyo. Some twenty years ago rubber trees were planted at the experimental station, where some of them are now four feet in circumference at a height of three feet from the ground.

The rubber testing well, the authorities began to sell plantations at cost, and sought to encourage the formation of larger ones by purchases from the Department of Agriculture and Commerce. Operations were carried on between 1890 and 1913, which thus encouraged rubber planting. The trees planted include Pará rubber, *Ficus Elastica* and Ceará, the latter being preferred as most suitable, as it grows four or five feet a year.

Pará rubber trees, for climatic reasons, are not regarded as good for this district. Generally speaking, these trees are not old enough for tapping until the eleventh or twelfth year.

Last spring a party of twenty fourteen to fifteen-year-old boys was dispatched to the Suzuki rubber plantation, in Singapore, another company of boys being sent for the same purpose to the Ogasawara Islands. About one-half of the former colony was attacked by beri-beri, malaria and other diseases induced by the climate and temperature; one of the boys dying. The wages of these plantation laborers are 35 to 40 sen (17-20 cents) a day.

JAPANESE PLANTING IN MALAYA.

Japanese settlers seem to have secured nearly 100,000 acres in the Malay peninsula, of which about 2,500 acres have been cultivated. Tapping has so far extended to only 700 acres of the Akuzawab plantation (Johore), tho an increase of tapping is looked for each year. Normal business conditions are being restored, as compared with last year, when they were very poor.

Among special features of Japanese rubber plantations in Malaya is the fact that the experience of several years shows the cost of producing crude rubber as 8 pence to 12 pence (16 to 24 cents) per pound, while other foreign rubber planters estimate the cost at 18 pence (35 cents). The reason

of this lower range of prices is to be found in payment of lower salaries, Japanese specialization and the cheaper living expenses. Japanese expenses per acre are said to be only one-third to one-fourth of the expenditure per acre of European and American plantation holders. The hire of Indian or Malayan plantation directors is less expensive than that of Europeans or Americans, who, moreover, are usually not inclined to take the part of the plantation owners; while the similarity of race, language and customs tends to co-operation with the Japanese planters on the part of the Malayan directors. The Japanese planters are, however, at a disadvantage through having to pay 10 per cent. for their capital, while Europeans and Americans only pay as a rule 4 per cent. interest.

JAPANESE INSULATED ELECTRIC WIRE COMPANIES

The general financial depression had reached the commercial and industrial world of Japan in 1913, when the situation of the electrical industry reduced the demand for electric wires and cables. Under these circumstances there has been a keen competition for business, due to the inability of the manufacturing companies to suddenly restrict their production. These conditions resulted in a low scale of prices, disadvantageous for the makers of electric wires and cables.

The balance sheets of the leading companies show the results of their operations. The Yokohama Electric Wire Manufacturing Co., Limited, with a capital of \$1,942,769, has made a profit of \$99,643, or about 5 per cent. A dividend of 10 per cent. per annum was paid. Among the items of the balance sheet are: Stocks—raw material, \$140,813; half manufactured goods, \$101,338; manufactures, \$91,186.

The Fujikura Electric Wire Co., Limited, paid 10 per cent. and carried down stocks: Raw materials, \$137,329; half manufactured goods, \$63,209; manufactures, \$59,988.

The Nippon Electric Wire & Cable Co. paid 8 per cent. and brought down stocks: Raw materials, \$34,256; half manufactured goods, \$18,072; manufactures, \$43,735. Such are the principal items of the three balance sheets in question.

At an extraordinary general meeting of the Way-Halim (Sumatra) Rubber and Coffee Estates, Limited, convened for the purpose of considering a scheme of reconstruction, resolutions were carried for the voluntary winding up of the company and the appointment of liquidators.

THE BATAVIA INTERNATIONAL RUBBER CONGRESS.

According to the preliminary program of the above congress, to be held from September 7 to 12, the papers to be read, in conjunction with the subsequent discussions, will prove of marked benefit to the cause of rubber technology. They will deal with "Science and Tropical Cultivation," "Planting Distances and Thinning Out," "Progress of Investigation as to the Cultivation of Tropical Plants—Particularly Rubber," "Diseases and Pests of *Hevea*," "Tapping and Tapping Systems," "The Preparation of Rubber," "How to Realize a Reduction of Cost Price of Rubber," "Methods of Testing Raw Rubber," and other subjects.

A number of the most prominent rubber experts from the Malay States will attend the congress and will discuss with their Dutch and Dutch-Indian colleagues problems of mutual interest.

BATAVIA AS A MARKET FOR MOTOR VEHICLES.

According to a report from the German Imperial Consulate General at Batavia, the imports at that point have included the following:

	1910	1911	1912
Bicycles	2,440	3,190	5,185
Automobiles	128	162	270

Similar conditions are said to prevail at Semarang and Sourabaya, the two other leading ports in Java.

THE DELI TESTING STATION AT MEDAN, SUMATRA.

This testing station was established in 1893 by the Deli Planters' Association, and remained till 1903 under the direction of Dr. van Breda de Haan. In 1906 an association was formed with the intention of building a new and more extensive station, with a yearly subscription list amounting to \$20,000 during seven years. In June, 1912, it was decided to erect the present building, shown in the accompanying illustration, the annual subscription list being increased to the equivalent of \$60,000. The present director, Dr. de Bussy, assumed office on January 1, 1913.

On entering the building the vestibule leads on one side to the directors' laboratory, and on the other to the administrative offices. Abundant space has been allowed in all parts of the building. In the upper portion of the front there is a large room intended for use as a lecture hall and likewise as a museum.



THE DELI TESTING STATION AT MEDAN, SUMATRA

RUBBER NOTES FROM BRITISH GUIANA.

IN my letter published in the January number of THE INDIA RUBBER WORLD I gave some account of the Governor's journey through the interior of the colony to the Brazilian boundary, accompanied by a railway engineer, with a view to ascertaining the prospects of a railway through the forest of this country to the savannah lands. In that letter, as in other letters, I pointed out how vital to the continued prosperity of the balata industry such a railway is. It is extremely satisfactory, therefore, to be able to state that in preparation for the annual meeting of the local legislature the Governor has issued as a White Paper a copy of the despatch sent by him to the Secretary of State for the Colonies definitely recommending such a railway and asking the Imperial Government for a loan in order to encompass the building of the line.

It is designed that the road shall follow the Essequibo river until a suitable opportunity occurs for bridging that wide expanse of water, and to terminate at Takutu on the Ireng river, running close to the head waters of the Rupununi river, where the larger activities of the balata industry are concentrated.

The Governor does not rely upon this industry to provide the proposed railway with traffic, but he recognizes that it will contribute generously to the total receipts required to make the concern a paying one. He relies chiefly upon establishing a flourishing cattle raising industry upon the savannah lands. There is already the promising nucleus of such an industry on these lands, but it does not grow because of the lack of means of transport. Similarly it is hoped that agriculture will prove a profitable means of livelihood.

Professor Harrison, Director of Science and Agriculture, reporting upon several samples of soil submitted from those savannahs, says that much of the land is suitable for agriculture, and among the crops he mentions as likely to prove successful are Pará and Ceará rubber, in the latter respect confirming the experiments of Mr. H. P. C. Melville, the Government Commissioner in the district.

But that the Governor is sensible of the value of the balata industry is testified by the following paragraph in his despatch to the Secretary of State for the Colonies: "More than half of the total production of balata in the colony comes from the Rupununi district. In 1913 the production was 759,375 pounds, out of a total of 1,316,755 pounds. The value of this product in 1912 was 3s. 10d. a pound. The price dropped in the middle of 1913 to 2s. 10d. It is doubtful if the extraction can be profitably continued without cheap transport to the interior. If such transport is provided, as would be the case if this proposed southern line is built, in lieu of the industry ceasing the annual export would probably increase. I do not look upon the forest balata industry as a continuously permanent one, but the present trees of tappable age are not likely to be exhausted under ten years from completing of the line, when young trees will take their place."

It may be worth while to state the main features of the scheme.

It is estimated that the cost of the line, at \$12,500 a mile, will be \$5,625,000; and, allowing \$125,000 for improved facilities for wheeled transport across the savannahs, \$250,000 for immigration and settling immigrants on the southern lands, and a \$250,000 area for a feeder railway from Potaro mouth to the Gold fields, the total cost would amount to \$6,250,000. This sum the Governor is asking the Imperial Government to lend the colony. It is not expected that the line will pay at first. Interest and sinking fund on the loan are estimated at \$300,000 a year and running expenses at another \$250,000, while the receipts for the first few years are only estimated at \$250,000, thus leaving for a time an annual deficit of \$300,000. The Governor, therefore, asks that the line be constructed with "funds supplied by the Imperial Government, coupled with an annual grant to meet deficit on

working expenses until the increased traffic and receipts, or the development of the country due to the construction of the line, make it possible for the colony to assume responsibility."

It is not anticipated that there will be much difficulty with the Imperial Government. To fit the scheme into local conditions will provide the most difficult obstacle to be surmounted, it is felt. This colony enjoys a form of representative government. In the Court of Policy, which passes the laws, eight unofficial members, elected on a popular franchise, sit with eight official members, with the Governor as president, and the Governor's casting vote gives the Government a majority. In the Combined Court, which deals with expenditure, revenue and taxation, however, the unofficial element is reinforced by six additional members (elected on the same franchise) known as Financial Representatives—thus giving them a majority. But the power of the unofficial element is limited. It can reduce expenditure, but it may not initiate it. It may recommend new expenditure, which the Government may accept or reject at its pleasure.

In his despatch to the Secretary of State the Governor alludes to the local difficulty. He says: "An initial objection that is likely to be raised to the grant of an Imperial loan for railway construction is that this colony possesses very complete local control, by means of a very large elective majority in the Combined Court, over both revenue and expenditure. It is an axiom of the Imperial Treasury that without control over the finances of a Dependency no advances can be made from Imperial funds. This is a very reasonable rule, but I believe I am right in saying that, altho the people cherish greatly their present constitution, yet they would willingly, in order to secure the much-longed-for railway to the interior, assent to such a reduction in the numbers of the elective section or increase to the official members as to give the Home Government, through the Governor and his officers, the same power and control over the administration and finances as now exist in, say, Trinidad; if not indefinitely, at any rate until the colony is in a position to assume full responsibility for the financial obligations the construction and working of the proposed railway must entail."

While the Governor's proposal had been enthusiastically received, the suggestion that the constitution shall be modified has created much difference of opinion. There are many who feel that the railway at such a cost would not be worth having, while others do not value the constitution so highly.

THE RUBBER INDUSTRY—THE GOVERNOR'S OPTIMISM.

In his annual address to the legislature the Governor gave some interesting particulars about the rubber industry. He said: "Mr. Bancroft, the newly appointed Assistant Director of Science and Agriculture, came fresh from the Malay Peninsula, which has the most extensive rubber plantations in the world. He has most successfully supervised the tapping on both government and private lands of the few rubber trees of tappable age. The results obtained under his supervision are quite equal to those secured in Asia and conclusively prove what I have never doubted—that Pará rubber can be grown in British Guiana quite as well as in Ceylon, the Malay States and Java. Unfortunately the market value of rubber has greatly fallen during the past year, and—what was never expected—plantation rubber, which had previously sold at a premium over fine hard Pará, has fallen to a discount of from ten pence to one shilling (20 cents to 24 cents) below the price of the Amazon product. This depreciation is thought by some to be due to prejudice, but is principally, in all probability, the result of variation in quality of the product. That plantation rubber, when standardized to quality, will sell as readily as the jungle product can hardly be doubted, and personally I still consider that rubber planting in this colony should be a profitable occupation, situated as it is so much nearer to the markets of the world than the plantations in Asia. One cannot help regretting that the cultivation was not taken up earlier and more extensively."

Some Rubber Planting Notes.

THE CENTRAL COLLEGE OF TROPICAL AGRICULTURE

As it will be recalled, Professor Wyndham Dunstan, Director of the Imperial Institute, London, recently visited Ceylon, where he attended the meetings of the Committee on the College of Tropical Agriculture. He has since been on an official visit to India. It was Professor Dunstan's suggestion that a College of Agriculture suited to the needs of the whole Empire should be founded in Ceylon. The influential London committee then appointed, agreed (notwithstanding opposition from other countries) upon a scheme for a college there, details of which were forwarded to the Board of Agriculture in that island and respecting which Professor Dunstan has been in consultation with the local authorities.

SAPUMALKANDE RUBBER CO., LTD. (CEYLON).

From a total area of 2,786 acres, of which 1,970 are cultivated, this company produced in 1913 323,984 pounds, against 241,324 pounds in 1912.

MR. LOUDOUN-SHAND ON THE MARKET.

In a recent address to the shareholders of the Hevea Rubber Trust of London (a company with a paid-up capital equalling \$375,000), Mr. J. L. Loudoun-Shand (a director in some ten companies) opposed the hoarding up of rubber, the temporary advance in price being likely to prove disastrous in the long run. He expressed his belief in an open public market, with sales as frequently as possible, thus facilitating business and keeping the planting companies before their customers in every country.

DUNLOP'S MANAGING DIRECTOR ON RUBBER CURING.

Mr. A. Du Cros, managing director and deputy chairman of the Dunlop Rubber Co., Ltd., recently visited the Botanic Gardens at Peradeniya, Ceylon, where he was much impressed by some of the blocks turned out by the various smoking apparatus now in existence. He stated that his firm only dealt in three kinds of rubber—hard Pará; rubber produced on their own estates in Ceylon and Malaya, and certain brands of plantation rubber which had been found of consistent regularity. All the machine work was done at home with satisfactory results, while on their plantations they aimed at curing the latex. In his opinion planters would all have to revert to some simple process of curing.

GERMAN NEW GUINEA CO.

The report of this company for 1913 shows a relatively large increase upon 1912, the yield of rubber amounting to 19½ tons as compared with 11½ tons, the distribution being as follows: *Ficus elastica*, 13¾ tons; *Castilloa elastica*, 4 tons; *Hevea brasiliensis*, 1¾ tons. In view of the prevailing rubber crisis, efforts are being directed towards the production of a first-class product, with a view to meeting the increasing competition.

The exports of the year 1913-14 from the British Solomon Islands will include a small quantity of rubber, the result of the tapping of a number of trees which have attained the age of four years. Cotton in small quantities has also been produced on these islands, but labor to make the cultivation of either product a profitable venture is not at present available.

SELABA RUBBER ESTATES, LTD. (FEDERATED MALAY STATES).

Out of a total area of 2,832 acres, 2,493 are cultivated, and in 1913 produced 407,069 pounds. The crop of 1912 was 319,595 pounds.

GOLDEN HOPE RUBBER ESTATE, LTD. (FEDERATED MALAY STATES).

Of a total area of 897 acres, 850 are planted in rubber, and in 1913 produced 179,526 pounds, against 146,430 pounds recorded for 1912.

STATISTICS OF FEDERATED MALAY STATES.

Official statistics to the end of 1912 show the following quantities of rubber exported from the Federated Malay States during the last 6 years: 1907, 1,984,285 pounds; 1908, 3,165,600 pounds; 1909, 6,087,815 pounds; 1910, 12,212,526 pounds; 1911, 19,695,330 pounds; 1912, 34,732,415 pounds.

The total area under rubber was as follows:

	1910	1911	1912
Number of estates.....	435	700	703
Acreage in possession.....	579,598	766,793	794,545
Acreage planted to December 31....	245,774	352,974	399,197

In 1912 the area opened for rubber was 46,223 acres, as compared with 107,200 in 1911.

The report of the Director of Agriculture states that rubber is now being produced in Malaya and placed on the market at 1s. to 1s. 2d. (24.33c. to 28.38c.) per pound. A further reduction of cost is anticipated as the result of various economies. Special attention is being paid to mechanical labor-saving devices in connection with the experimental plantation at Kuala Lumpur.

In the concluding words of his report, the Director of Agriculture says that there is no need to fear the competition of synthetic rubber for several years, when plantation rubber can be put on the market by well-managed estates at 1s. (24.33c.) a pound.

The number of laborers on estates of over a hundred acres in 1912 was 188,050, being an increase of about 22,000 as compared with 1911. Wages varied according to the place of employment, Chinese workers earning in some cases as much as \$1.20 a day and Tamals as little as 25 cents a day.

FOREIGN COMPETITION IN MALAYA.

As compared with 1896 the Straits Settlements imports of British goods for 1912 showed a gain of about 90 per cent., while those from the continent of Europe and the United States more than doubled in that period. India rubber goods are among the German products showing an increased trade with the Straits Settlements between 1896 and 1912.

SUMATRA'S INCREASING PRODUCTION OF RUBBER.

The reports of three Sumatra companies to January 31, 1914, show largely increased outputs. For five months then terminating, the United Serdang Rubber Plantations report 705,456 pounds, as compared with 392,189 pounds during the corresponding period a year earlier. For 12 months the Sialang Rubber Estates show 301,616 pounds against 176,586 pounds for the twelve months ending January 31, 1913.

SOURABAYA RUBBER EXPORTS.

The years 1910 to 1912 showed a progressive development in rubber exports from Sourabaya, Java, the respective figures being 31, 62½ and 103½ tons. Of the last named quantity about 50 per cent. went to the Netherlands, 35 per cent. to Great Britain and 15 per cent. to other countries.

BELGIAN ENGINEER VISITS GERMAN EAST AFRICA.

During the years 1912 and 1913 M. Paul Janssens, engineer, attached to the Belgian Department of Agriculture, visited German East Africa and reported that the plantations of *Manihot Glaziovii* in that region had been developed in a remarkable manner. He gives the annexed details:

	Acres		Trees		Exports of
	Planted.	In bearing.	Planted.	In bearing.	rubber, Tons.
1908					87
1909	29,665	5,372	11,868,406	1,924,454	218
1910	40,530	9,360	14,425,526	3,497,367	414
1911.....	63,710	21,416	20,293,709	8,544,662	685
1912					856

The report states that the total German imports of rubber amounted in 1912 to 20,586 tons. It further adds that the *Manihot* requires only a small rainfall, being capable of standing protracted seasons of drought. It is admitted that a yearly rainfall exceeding 39 inches, while increasing the quantity of latex materially reduces the production of rubber. The tree is satisfied with a relatively poor soil, provided the latter is deep and, above all, permeable; the best soil being covered with thick brush or small forests. While *Manihot* flourishes up to 5,000 feet above sea level the most suitable elevation appears to be about 1,650 feet. Marshy or humid soils should always be avoided, a preference being given to locations on a slope from which water easily flows.

M. Janssens' report likewise deals with tapping, coagulation, drying and packing, as well as various insect and other pests causing trouble in rubber cultivation.

RUBBER IN BRITISH EAST AFRICA.

Exports of rubber from British East Africa are reported as follows for the year 1912-13:

	Tons.	Value.
Wild rubber.....	53	\$76,260
Plantation rubber.....	24	36,445

Total	77	\$112,705
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The whole of the plantation rubber went to Great Britain, while of the wild rubber 25 tons went to England, 13 tons to Zanzibar and 15 tons to Germany.

PROPOSED SALE OF RUBBER SEEDS

During August and September next, the Agricultural Department of Southern Nigeria will offer 400,000 Pará rubber seeds for sale. The price is 20s. (\$4.86) per 1,000 exclusive of freight charges. The seeds will be specially selected by the Agricultural Department from trees under their control. Applications should be addressed to the assistant director at Ibadan and the superintendent of agriculture at Calabar.

KAMERUN RUBBER EXPORTS.

German statistics show the rubber exports from Kamerun to have been: 1908—1,214 tons; 1909—1,518 tons; 1910—1,962 tons; 1911—2,708 tons; 1912—2,811 tons. In the last named year about 90 per cent. of the quantity went to Germany and the bulk of the remainder to England.

A report by a reputable brokerage firm of Madras on the rubber industry of Southern India—confined chiefly to Travancore and Cochin—placed the number of important plantations in that section in 1912 at 23, with a planted area of 36,606 acres, and a reserve of 34,791 acres. It also estimated the output for that year—no definite details of which are available—at 931,500 pounds.

NOTES FROM THE COTTON TRADE.

THE 1913 COTTON CROP.

FROM recent statistical indications, the American cotton crop of 1913, 13,677,000 bales, will rank as the most valuable ever grown in this country. The lint represented \$850,570,500, and the seed and linters \$125,000,000, making a total value of \$975,570,000.

MILL CONSTRUCTION SLOW.

With reference to the restricted erection of cotton mills in 1913, it has been remarked that the object of operating a factory is not to make cloth but to sell it. Unless there is a probability of selling their product there is no inducement to build mills. This explanation is given of the fact that 62½ per cent. of the total American crop is exported and intended to refute the argument that as long as a single bale is exported, there is room for it to be worked up at home.

MANUFACTURED COTTON IMPORTS.

Total imports of manufactured cotton goods have remained about the same during the last three calendar years: 1911—\$65,804,994; 1912—\$67,978,226; 1913—\$65,359,542. In 1913 laces, etc., represented about 55 per cent., wearing apparel 11 per cent., and cotton cloths 15 per cent.

ALTERNATIVE SOURCES OF SEA ISLAND COTTON.

In a lecture at Glasgow, Professor John A. Todd stated that in the event of the boll weevil destroying the American crop of Sea Island cotton, the West Indies and Egypt were the only two parts of the world capable of supplying the deficiency.

EXPORTS OF UNMANUFACTURED COTTON.

According to official returns, exports of unmanufactured cotton for the calendar year 1913 represented 8,609,488 bales, value \$575,488,090. The amounts for previous years were: 1911—8,607,401 bales, value \$517,053,575; 1912—10,694,472 bales, value \$623,077,439.

MANUFACTURED COTTON EXPORTS.

Manufactured exports for 1913 represented a total of \$55,536,267; as compared with \$45,686,591 for 1911 and \$52,450,888 for 1912. Of these amounts in 1913 cotton cloths represented about 60 per cent., waste cotton 9 per cent., wearing apparel 20 per cent.

THE CHILEAN TEXTILE TRADE.

Chile being a direct gainer by the Panama Canal in its trade with the United States, it is of interest to note that the textile imports of that country represented in 1911 about 9½ million dollars, and in 1912 10 million. Of the latter amount cotton formed about 50 per cent. and wool 27½ per cent.

Of the entire textile imports, the United Kingdom supplies about 40 per cent., Germany 30 per cent. and the United States 3 per cent. There is thus consequently a good opening for the expansion of trade in cotton goods with Chile by the United States. In 1912 it reached about \$800,000, according to Washington statistics.

ABOLITION OF WASTES IN COTTON MANUFACTURING.

The application of chemistry to finishing cotton goods has led to the abolition of many forms of waste through skill in combining chemical equivalents.

FIVE LARGEST COTTON STATES.

A report of the comparative ginnings in various states of the crop of 1913 to January 16 included: Texas, 3,718,725 bales; Georgia, 2,316,304 bales; Alabama, 1,475,642 bales; South Carolina, 1,369,434 bales; Mississippi, 1,176,626 bales.

The ginnings of Sea Island cotton to above date included: Florida, 25,356 bales; Georgia, 42,650 bales.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED FEBRUARY 3, 1914.

- N**O. 1,085,641 Spring wheel. F. Stitzel, Louisville, Ky.
 1,085,700 Resilient wheel. H. C. Percy, Natchitoches, La.
 1,085,723 Vehicle wheel. J. D. Campbell, Newark, and A. J. Martin, Passaic, N. J.
 1,085,772. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio.
 1,085,773. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio.
 1,085,883 Inhaler. C. Wilson, New York.
 1,085,873. Spare tire holder. P. Morrissey, Easthampton, assignor to T. A. Cotter, Willimantic, Conn.
 1,085,926. Apparatus for producing vacuum. J. I. McCormick, Chicago, Ill.
 1,086,139. Process of manufacturing caoutchouc-like products. A. Caroselli, assignor to the firm of Chemische Fabrik Floussheim, Dr. H. Noerdlinger, both of Floussheim on the Main, Germany.
 1,086,162. Spring wheel. D. A. Gray, Chattanooga, Tenn.
 1,086,174. A resilient tire shock absorber. O. J. Hobson, Portland, Ore., assignor to Hobson Tire Co., Vancouver, Washington.
 1,086,228. Cushion tire. J. C. Schleicher, Mount Vernon, N. Y.
 1,086,288. Lawn sprinkler. H. Gibbs, assignor to W. D. Allen Mfg. Co.—both of Chicago, Ill.
 1,086,290. Hose supporter. R. Gordon, West Newton, Mass.
 1,086,330. Vehicle wheel. T. Midgley, Hartford, Conn., assignor to the United States Tire Co.
 1,086,333. Vehicle wheel. C. L. Russell, Rexburg, Idaho.
 1,086,338. Insulating lining. C. L. Sherman, Philadelphia, Pa.

Designs.

- 45,211. Hot water bottle. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.
 45,213. Water bottle, syringe bag or similar article. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.
 45,216. Lawn Sprinkler. C. C. Armstrong, Marysville, Ohio.
 Trade Marks.
 61,184. Revere Rubber Co., Providence, R. I., and Chelsea, Mass. The words *Spring Step*. For rubber heels for boots and shoes.
 62,687. The Stenography and Reporting Co., Trenton, N. J. The word *Sarco*. For rubber erasers and other business stationery.
 73,663. Lee Brock, Inc., Louisville, Ky. The words *Lee Brock*. For tire treads.
 74,360. J. H. Gardner, San Jose, Cal. Illustration of an auto with words *Puncture Proof Dixie Compound*. For puncture proof compound.
 74,364. J. G. Helms, Baltimore, Md. The words *Shine Shoe The real "Sole Mate"*, written round circle with woman's head and shoe in center. For boots, shoes, etc., made wholly or in part of leather, canvas or rubber.
 74,530. H. P. Rindskopf, New York. The word *Milady*. For dress shields.

ISSUED FEBRUARY 10, 1914.

- 1,086,354. Hose rack. J. D. Disinger, Buffalo, N. Y.
 1,086,370. Wheel. E. R. Josselyn, San Martin, Cal.
 1,086,377. Rear tire-holder for automobiles. F. Lederer, Milwaukee, Wis.
 1,086,447. Pneumatic tire. S. E. Feige, Akron, Ohio.
 1,086,497. Spring wheel. N. Withers and C. Speidel, Richland Centre, Wis.
 1,086,523. Tire protector composed of fabric and rubber protected metal discs. J. E. and L. Goodman, Stockton, Cal.
 1,086,550. Pressure relief valve for pneumatic tires. W. J. Morrison, Sioux City, Iowa.
 1,086,558. Antiskid chain. C. R. Rawdon and E. M. Parker, St. Louis, Mo.
 1,086,646. Heating apparatus for water bag. H. W. Christian, Longbeach, Cal.
 1,086,653. Protective case for pneumatic tires. L. Dan, Portland, Ore.
 1,086,689. Spring wheel. J. L. Parker, Galgate, near Lancaster, England.
 1,086,696. Tire armor. N. Anderson, Ballston Spa, N. Y.
 1,086,757. Pneumatic tire. M. A. Deas, Pascagoula, Miss., assignor to American Tire Co., St. Louis, Mo.
 1,086,760. Demountable rim locking device. H. C. Ford, Jamaica, N. Y., assignor to J. W. Hill, New York.
 1,086,782. Pneumatic shoe form. O. E. Moore, Coldwater, Kan.
 1,086,786. Vehicle wheel. A. F. Priest, Akron, Ohio.
 1,086,805. Pneumatic tired wheel. E. Cannes, New York.
 1,086,815. Tire protector. L. S. Gill, Elko, Nev.
 1,086,897. A composing device for printers, comprising a layer of elastic material. G. R. Cornwall, Rye, N. Y., assignor to American Planograph Co., of West Virginia.
 1,086,923. Resilient tire. B. E. Leas, Luverne, Minn.
 1,086,924. Armored pneumatic tire. J. E. Lee, Conshohocken, Pa.
 1,086,947. Pneumatic tire. J. E. Smith, Clinton, Iowa.
 1,087,006. Spray nozzle. L. E. Fitzsimons, assignor to the Novelty Mfg. Co.—both of Waterbury, Conn.
 1,087,013. Resilient tire. C. Herminghuysen, Van Wert, Ohio.
 1,087,038. Resilient wheel. G. C. Moore, Campton, Ga.

Reissue.

- 13,687. Power tire pump. H. D. Waterhouse, Wollaston, Mass.

Trade Marks.

- 53,288. Howe Rubber Co., Newark, N. J. The words *Lo Hooget*. For ankle protectors, hot water bags, etc.
 67,468. The Russell Mfg. Co., Middletown, Conn. The word *Stantire*. For woven machine belting.
 67,610. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The word *Micarta*. For electric insulating sheets and tubes.
 70,773. United States Rubber Co., New York. The words *Bestin Steel Wool Brand*. For rubber boots and shoes, etc.
 71,800. F. A. O. Schwarz, New York. Illustration of ball for golf balls, etc.
 72,940. A. W. Faber, Stein, near Nuremberg, and Biedt, Germany. Illustration of whale. For rubber erasers.
 73,062. A. G. Spalding & Bros., New York. The word *Olympic*. Golf balls, etc.
 74,529. H. P. Rindskopf, New York. The word *Br. Shields*. For dress shields.
 74,901. Wallace, Scott & Co., Ltd., Glasgow, Scotland. Illustration of coat of arms. For rainproof coats and other articles of apparel.

ISSUED FEBRUARY 17, 1914.

- 1,087,201. Pump for automobile tires. J. H. Templin, Philadelphia, Pa.
 1,087,224. Vehicle wheel. J. J. Fahrney, Timberville, Va.
 1,087,261. Process of making isoprene. C. Ruder, Wandsbek, near Hamburg, Germany.
 1,087,312. Armor for pneumatic tires. C. Matson, Elizabeth, assignor of one-half to E. Huch, and one-half to R. Burkart, Aldene, N. J.
 1,087,391. Resilient wheel. R. A. Nicholson, Russellville, Okla.
 1,087,467. Vehicle wheel rim. E. C. Shaw, assignor to the B. F. Goodrich Co.—both of Akron, Ohio.
 1,087,474. Resilient tire. H. Wellstead, Evanston, Ill.
 1,087,491. Life saving garment. J. Herlihy, San Francisco, Cal.
 1,087,534. Detachable wheel rim. H. C. Gibson, New York, assignor to The Firestone Tire & Rubber Co., Akron, Ohio.
 1,087,589. Vulcanizing apparatus. J. C. Klahn, Berlin, Ontario, assignor to Canadian Consolidated Rubber Co., Ltd., Montreal, Canada.
 1,087,618. Tire fastening device. R. C. Wall, Philadelphia, Pa.
 1,087,626. Flexible suspension wheel for automobiles. O. Allen, Denver, Colo.
 1,087,628. Demountable rim. J. A. Anglada, New York, assignor to the Anglada Co., of Michigan.
 1,087,637. Storage battery separator comprising a thin sheet of wood having a casing of rubber. C. C. Carpenter, Niagara Falls, New York, assignor to The United States Light & Heating Co., of New York.
 1,087,682. Resilient tread. P. W. Pratt, Boston, Mass.
 1,087,731. Elastic metal tire. G. E. Dargatz, Kansas City, Mo.
 1,087,815. Horse shoe filling, composed of soft rubber, gutta percha, caoutchouc, etc. A. Oetker, Ottensen, near Altona, Germany.
 1,087,829. Attachment for retaining rubber shoes. T. C. Ridge, Carthage, Ill.
 1,087,846. Tire spreading device. J. O. Stewart, Spokane, Wash.

Designs.

- 42,281. Water bottle, syringe bag or similar article. F. O. Williams, Brookline, assignor to United Drug Co., Boston, Mass.
 Trade Marks.
 63,393. St. Paul Rubber Co., St. Paul, Minn. Solid black circle on which appear in white letters the words *St. Paul Rubber Co.* and *Hickory Brand*. For rain coats, rubber boots, etc.
 67,564. C. H. Graves, Providence, R. I. The word *Invincible*. For rubber and leather tires for vehicles.
 69,967. Société Generale des Etablissements Bergougnan, Clermont-Ferrand, France. The words *Le Gaulois*. For rubber tires, treads, etc.
 72,462. A. S. Carmichael, Denver, Colo. The words *Joy Ride*. A compound for curing punctures in tires.
 74,773. Apsley Rubber Co., Hudson, Mass. A. R. Co. in the form of a circle. For rubber coats, boots and shoes.

ISSUED FEBRUARY 24, 1914.

- 1,087,919. Moistening apparatus. M. J. Buckley, Milwaukee, Wis.
 1,087,942. Resuscitating apparatus. C. M. Hammond, Memphis, Tenn.
 1,087,960. Spring wheel for vehicles. W. J. Luttrell, Honey Grove, Tex.
 1,087,963. Spring wheel. M. Mathiesen, San Antonio, Tex., assignor to Mathiesen Spring Cushion Wheel Co., of Maine.
 1,087,979. Detachable shoe. F. W. Putnam, Binghamton, N. Y.
 1,088,053. Resilient tire. N. L., Raymond P. and J. F. Baker, Elm Grove, W. Va.
 1,088,108. Split rim construction. F. and N. M. Spranger, Detroit, Mich.
 1,088,200. Detachable tire fastener. J. D. Bowne, Jamesburg, N. J.
 1,088,311. Ravelling rim with sheeting of rubber composition. M. J. Whelan, Muskegon, Mich., assignor to Brunswick-Balke-Clender Co., of Delaware.

- | | |
|------------|---|
| 1,088,540. | Removable rim attachment for vehicle wheels. M. Küller, Gross-Lichterfelde, near Berlin, Germany. |
| 1,088,386. | Spring wheel. G. Weaver, Jellico, Tenn. |
| 1,088,540. | Wheel for motor vehicles. J. L. Watford, New York, N. Y. |
| 1,088,543. | Liner for tires. S. E. Covington, Bellefontaine, Ohio. |
| 1,088,551. | Motor vehicle tire. H. Dornay, V. Henri and E. Veil-Picard, Paris, France. |
| 1,088,596. | Resilient tire for vehicles. P. Lavelle, Johnstown, Pa. |
| 1,088,656. | Motor vehicle tire. B. F. Goodrich Co.—both of Akron, Ohio. |
| 1,088,663. | Pneumatic bulb. I. F. Kepler, assignor to The B. F. Goodrich Co.—both of Akron, Ohio. |

Trade Marks.

- 71,473. *Meco*. Pumps for inflating motorcycle tires, tools for removing motorcycle tires.
- 71,473. Churchill & Alden Co., Brockton, Mass. The word *Ralston*. For boots and shoes of leather, rubber, etc.
- 71,637. Johnson & Johnson, New Brunswick, N. J. Linked circle. For rubber protectives, surgical dressings, etc.
- 72,590. L. Bertram, Hanover, Germany. The word *Russka*. For surgical rubber goods, rubber sponges, etc.
- 74,291. The National Belting Co., Elyria, Ohio. The words *Red Jacket*. For belts and belting.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

*Dentes Patents for American Inventions

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, FEBRUARY 4, 1914.]
3,900 (1913). The attachments to ribs C-I Arnold "Thorak

- 23,205 (1912). Detachable rim attachments to wheels. E. M. Begon, St. Genis-Laval, Rhone, France.
- * 23,219 (1912). Apparatus for coagulating latex. F. A. Byrne, 2 Ladgate Hill, Birmingham.
- 23,226 (1912). Vulcanizing tires. W. Gummer, 29 Alma Square, St. John's Wood, London.
- 23,296 (1912). Jackets and covers for wheel tires, and means for securing to rims. J. Stungo, 11 Eylauerstrasse, Berlin.
- 23,325 (1912). Protective facing of hard rubber for lacrosse stick. H. Broomfield, 4 Oxford st., Manchester, England.
- 23,383 (1912). Spring wheels with continuous outer rigid ring and pneumatic cushion. P. Mangan, 43 Rue St. North Fitzroy, near Melbourne, Australia.
- 23,390 (1912). Process of manufacturing rubber driving belts, etc. A. E. Wale, Coleshill, near Birmingham.
- * 23,405 (1912). Stocking suspenders. D. Kops, 435 Riverside Drive, New York, U. S. A.
- * 23,406 (1912). Corsets provided with hose supporters. D. Kops, 435 Riverside Drive, New York, U. S. A.
- * 23,407 (1912). Corset. D. Kops, 435 Riverside Drive, New York, U. S. A.
- 23,451 (1912). Vulcanizing apparatus for tires and such articles. H. R. Nash, High Bank, Church st., Altrincham, Cheshire.
- * 23,476. (1912). Nozzle for fire hose, etc. J. H. Cottle, 64 East 101st st., New York, U. S. A.
- 23,537 (1912). Filigree strengthener for vulcanite dental plates. R. F. Hopper, 123 Hatfield Road, St. Albans, Hertfordshire.
- 23,558 (1912). Reservoir pens. J. Gilbert, Board of Trade Bldg., Victoria, B. C., Canada.
- 23,571 (1912). Flushing apparatus with rubber padded stops. W. Beamish, Stoneycroft, Hastings, New Zealand.
- 23,632 (1912). Wheel tires. Continental Caoutchouc & Gutta Percha Cie, 100 Vahrenwalderstrasse, Hanover, Germany.
- * 23,645 (1912). Insoles for shoes. J. L. Barrows, 948 17th St., N. W., Washington, D. C., U. S. A.
- 23,671 (1912). Medical vaporizers; spray producers. C. Fellerer, Freising, Germany.
- 23,673 (1912). Vehicle wheels; springs. L. A. Desy, 120 Sanguinet st., Montreal, Canada.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, FEBRUARY 11, 1914.]

- 23,889 (1912). Patch for repairing the outer cover of a pneumatic tire. H. H. Burton, Granby Rubber Works, Post Office Place, Leicester.
- 23,944 (1912). Rubber nipples for feeding bottles. R. Haddan, 31 Bedford st., Strand, London.
- 23,998 (1912). Appliance for damping stamps, envelopes, etc., comprising an india rubber water container. P. Nussbaum, 23 Ludgate Hill, London.
- 24,030 (1912). Jackets and covers for wheel tires. D. Maggiora, 17 Gracechurch st., London.
- 24,041 (1912). Plastic compositions containing india rubber, gutta percha, etc. W. J. Luxmoore, 23 Red Lion Square, London.
- 24,064 (1912). Vulcanizing tires. W. Gummer, 29 Alma Square, St. John's Wood, London.

- 24,077 (1912). Puncture preventing band of vulcanite or other material for pneumatic tires. E. P. Carter, 58 Rowan Road, Bexley Heath, Kent.
- *24,141 (1912). Composite fabric for tires, etc., consisting of a mercerized fabric saturated with rubber or rubber substitute. A. H. Henderson, 2624 North Calvert st., Baltimore, Md., U. S. A.
- 24,156 (1912). Coagulating latex. W. Pahl, 4 Ringstrasse, Dortmund, Prussia.
- *24,233 (1912). Protective band for wheel tires. J. E. and L. Goodman, 218 E. Main st., Stockton, Cal., U. S. A.
- 24,291 (1912). Spring wheel embodying the use of india rubber balls. G. P. Milnes, Rowcroft, Stroud, Gloucestershire.
- 24,297 (1912). Securing means for garment shields comprising a pair of elastic bands. W. H. Hargroves, 45 Banner st., Bunkhill Row, London.

[ABSTRACTED IN THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, FEBRUARY 18, 1914.]

- 24,355 (1912). Tool for repairing punctures in pneumatic tires, etc. R. W. Sampson, 353 Olivier ave., Westmount, Quebec, Canada.
- 24,387 (1912). Golf balls. A. Johnston and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.
- 24,388 (1912). Athletic overshoe. S. F. Roberts and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.
- 24,415 (1912). Tread bands, projections and surfaces. H. Kuhnén, 2 Schlossberg, Eisenach, Germany.
- 24,450 (1912). Pneumatic tires; woven fabrics; compound fabrics. P. Raynier, Coud, Ardeche, France.
- 24,471 (1912). Golf balls. J. E. James, 1 Acres Field, Bolton; J. Child, 367 Moss Lane, East, Whitworth Park, and B. S. Atwood, 15 Cavendish Road, Chorlton-cum-Hardy—both in Manchester—and J. W. Hyde, 19 Victoria Square, Bolton.
- 24,576 (1912). Tire treads. A. Russling, "The Croft," Welburn Drive, Far Headingley, Leeds.
- 24,611 (1912). An elastic tire having a protecting tread. B. A. Godek, 60 Boulevard Clichy, and I. Benjamins, 17 Boulevard Exelmans—both in Paris.
- *24,629 (1912). Elastic fabrics. W. Kops, 435 Riverside Drive, New York, U. S. A.
- 24,637 (1912). Caoutchouc substances. Farbenfabriken vorm. F. Bayer & Co., Leverkusen, near Cologne, Germany.
- 24,675 (1912). A device for use in practicing golf putting. C. H. Minshall, St. Martins, Portland ave., Exmouth, Devon.
- 24,688 (1912). Life-saving equipments for submarines. Maschinenfabrik "Westfalia" Akt.-Ges. Gelsenkirchen, Westphalia, Germany.
- 24,720 (1912). Non-sliping devices formed of steel bristles set in backing of rubber, etc. T. and G. Pollard, 1 Western ave., Burnley.
- 24,795 (1912). Coagulating india rubber, gutta percha or balata. W. Pahl, 24 Ringstrasse, Dortmund, Prussia.
- 24,807 (1912). Fountain pen with an inner hard rubber tube. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
- 24,854 (1912). Treating rubber. F. A. Byrne, 2 Ludgate Hill, Birmingham.
- *24,878 (1912). Securing artificial teeth to vulcanite dentures, using in the process a solution of rubber. P. C. M. Ash, 5 Broad st., Golden Square, London, and A. Luns, 620 Race st., Philadelphia, Pa., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, FEBRUARY 25, 1914.]

- 24,962 (1912). Functure closing composition. F. R. Mason, "Sunnyside," St. John's Road, Brecon, South Wales.
- 24,970 (1912). Tobacco moisteners comprising discs of vulcanite or other material. C. A. Barrett, 100 Hillfield ave., Crouch End, London.
- 24,977 (1912). Covers for pneumatic cushions for wheels. A. F. Hawksley, Fairhaven, Lancashire.
- 25,034 (1912). Pneumatic wheel tires. S. J. Vaughan, The Woodlands, Ruckinge, Kent.
- 25,039 (1912). Surgical pads. R. E. Nolde, 73 Welford Road, Leicester.
- 25,047 (1912). Reinforcement for pneumatic tire tread. S. C. Caddy, Rook Hill House, Keynsham, near Bristol, and W. H. Welch, 4 Dongola ave., Bristol.
- 25,055 (1912). Reclaiming rubber. E. Zappert, 27 Chancery Lane, London.
- 25,157 (1912). Sectional wheel tires. O. T. Banks, 49 Mortimer st., Cavendish Square, London.
- 25,172 (1912). Tire covers comprising fabric layers adhered together by rubber solution. G. W. Beldam, Boston Lodge, Ealing, London, and A. U. B. Ryall, "Granville," Wind Mill Road, Brentford, Middlesex.
- 25,227 (1912). Ear instruments comprising hard rubber cups. H. F. and J. G. Kalse, Winnipeg, Canada.
- 25,230 (1912). Wheel tires. J. H. Knight, Barfield, Farnham, Surrey.
- 25,232 (1912). Travel hat of the type having inflatable tube round the back. C. Wolff, Muhlenstrasse, Waldenburg, Silesia.
- 25,249 (1912). Hernia trusses. E. Phelan, 333 Calle Lopez Cotilla, Guadaluajara, Jal., Mexico.
- *25,284 (1912). Pressure indicators for tires. G. T. Hackley, 207 South Broadway, Los Angeles, Cal., U. S. A.
- *25,325 (1912). Corsets provided with elastic insertions. D. Kops, 435 Riverside Drive, New York, U. S. A.
- 25,343 (1912). Stocking suspenders. R. H. and H. Wall, Ltd., 4 Love Lane, Wood st., London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 461,469 (August 19, 1913). Improvements in rubber vehicle tires. W. E. Bogdan.
- 461,471 (August 19). Anti-skid appliance for wheel tires. Walker Tire Chain Co.
- 461,483 (August 19). Pneumatic wheel for automobiles. C. A. Spittel.
- 461,534 (April 30). Improvements in air chambers for tires of automobiles, velocipedes and other vehicles. E. J. Andrien.
- 461,542 (May 26). Compressed air elastic wheel for automobiles and different vehicles. J. Rogel and J. Fouch.
- 461,577 (July 5). Utilization of old air chambers for making soles of footwear. Société Commerciale de Caoutchouc.
- 461,602 (October 31, 1912). Mud guard. L. A. Gachez.
- 461,627 (August 5). Elastic tire for vehicle wheels. L. Lainé.
- 461,638 (August 11). Improvements in mud guard for vehicles. A. Dufour.
- 461,700 (August 22). Protective armor for tires. M. J. Broderick.
- 461,720 (August 21). Improvements in mud guards for motor busses and trucks. J. Menu.
- 461,722 (August 22). Mud guard. J. A. Duval.
- 461,936 (August 27). Hose for extinguishing fires, watering and other purposes. L. Le Renard.
- 462,002 (August 29). Anti-skid appliance for vehicle wheels. W. H. Snyder.
- 462,081 (September 2). Elastic tire. De Mello Marques.
- 462,125 (August 27). Process and appliance for treating gums, principally Kautschuk. V. Reynaud.
- 462,138 (September 21). Process for simultaneous manufacture of elastic fabric and of lace trimming on an ordinary elastic web loom and the fabrics obtained by this process. C. Faure-Roux.
- 462,156 (November 14, 1912). Process for the purification of rubber. C. E. Anquetel.
- 462,195 (November 15). Improved air chamber for pneumatic tires. P. Foucher.
- 462,248 (September 6, 1913). Improvements in fabrics, particularly those for covering tires or balloons and impermeable wagon cloths, by the aid of coated yarns. "Le Liais."
- 462,262 (September 6). Improvements in tires. E. Nathan.
- 462,328 (June 18). Process for the devulcanization and regeneration of rubber. M. Capel and J. Thibernele.
- 462,408 (September 9, 1913). Protective cover for pneumatic tire. P. L. Ambrosol and C. H. Charpentier.
- 462,471 (November 23, 1912). Tire cover for vehicle wheels. C. Gauthier.
- 462,654 (August 29). Elastic fitting for vehicle wheels. H. P. Haas.
- 462,672 (September 6). Mud guard for motor busses. A. A. Vincent.
- 462,717 (September 17). Air chamber for tires. G. Lafaury.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

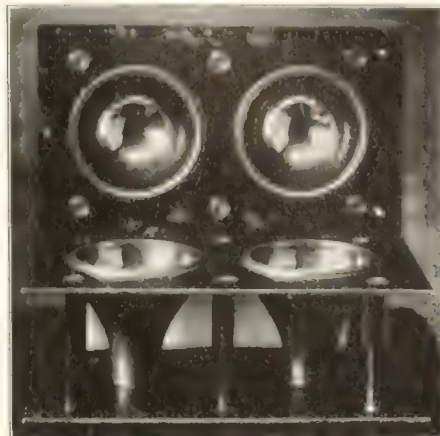
- 270,783, Class 63c (September 8, 1912). Rubber protective substance, with anti-skid rivets. Eugen Czaika, Millerstrasse 171a-172, Berlin.
- 270,949, Class 30k (March 12, 1913). Injector. Jules Courmand, Paris.
- 270,955, Class 39a (March 29, 1912). Apparatus for making rubber articles (particularly solid rubber tires) from various kinds of rubber-powder. Thomas Gare, Edgbaston, near Birmingham.
- 271,339, Class 45f (October 4, 1912). Cutting tool for tapping rubber trees, with guide roll, and a cutting edge arranged in an angular direction. Rowley, Davies & Co., Ltd., London.
- 271,152, Class 86c (November 20, 1908). Self-elastic webbing with the various parts made of differently twisted warp or weft yarns. Wilh. Jul. Teufel, Stuttgart.
- 271,608, Class 47h (April 23, 1913). Belting drive. Emma Boesner, Aix-la-Chapelle.
- 271,618, Class 63e (August 27, 1911). Manufacture of rubber tires of all kinds with lining of knitted material. Germanen Gummiwerk, Stuttgart.
- 271,724, Class 63e (August 24, 1912). Machine for manufacture of tread covers for compressed air tires, with fabric lining. Alphons Mathern, Zollikon, Switzerland.

"AUTOPHONIX" PNEUMATIC VULCANIZER.

This new German vulcanizer consists of a special heating appliance, which can be screwed on and used with any pneumatic tire, whatever the measurement. Its application is very simple. The damaged portion of the tire is cleaned and coated with "Autophönix Vulcanizer Solution," and then filled with "Autophönix Vulcanizer Mass." The whole is then surrounded with a small piece of fabric, and the apparatus screwed on, being left for 20 minutes, until it has reached a temperature of 140 degs. C. (284 degs. F.), when the tire is again ready for use.

NEW STYLE OF HORN BULB MOLD

The accompanying cut shows an entirely new departure from the old style rubber bulb mold. This type is said to be a distinct innovation and is the first attempt in the nature of improvement over the original. Among the advantages of the new mold—



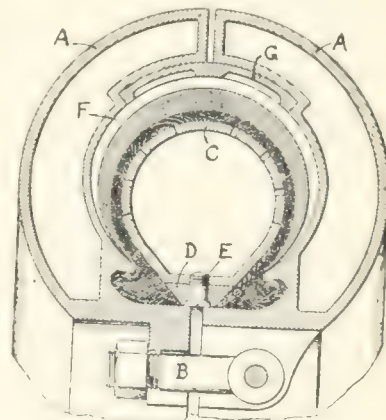
TWO CAVITY HORN BULB MOLD

which, by the way, is made by William Eggers & Sons, of 294 Taaffe place, Brooklyn—is the small quantity of metal used in its construction, which naturally means that it is very much lighter and consequently more susceptible to heat, cools more quickly, and therefore economizes time in vulcanization. The cut shows a two cavity autohorn bulb mold, size No. 12, the weight of which is only twenty pounds. These molds are used in rubber factories, are said to have produced excellent results and have been extensively patented by the makers.

MOLD FOR STRETCHING AND VULCANIZING TIRES.

In the manufacture of the ordinary type of pneumatic tire, the fabric foundation of the tire casing is covered with the raw rubber and placed under a uniform tension, which stretches

the fabric to approximately the limit of elongation of the threads, and the tire is vulcanized while in this condition. The accompanying drawing shows a new mold for accomplishing this purpose, the invention of N. W. McLeod, of St. Louis, Missouri, on which a patent was recently granted in England. The device comprises the hollow outer sections A, connected by means of the bolts B. The hollow core C is made in



THE STRETCHING AND VULCANIZING MOLD.

sections and is secured to the ring D by the screws E. The core is perforated so that steam admitted to the interior thereof will act upon the inner surface of the tire casing F. It will be seen that the space between the core and the outer section A is greater than the cross section of the tire before vulcanization. This allows sufficient clearance for expansion of the casing and the stretching of the fabric when the bolts B are tightened. Means are provided for introducing different forms of tread molds between the section A and the tire, one of these molds being shown at G, with the apparatus ready for the introduction of steam.

Review of the Crude Rubber Market.

THE London rubber market for March presented few changes. Fine Pará varied during the month from 3s. (72.98c.) to 3s. 0½d. (73.99c.). The price on 24th stood at 3s. (72.98c.). Plantation up to 13th fluctuated between 2s. 3¼d. (56.25c.) and 2s. 4½d. (57.77c.). Between the 14th and 24th it ranged from 2s. 4½d. (57.77c.) to 2s. 6d. (60.81c.), standing on 24th at 2s. 5¾d. (60.31c.).

Going back several months the figures on various dates were:

	Fine Pará		Plantation	
December	23...	3s. 1¼d. (75.51 cents).	2s. 3¼d.	(55.24 cents).
January	23...	3s. 2 d. (77.03 cents).	2s. 4¾d.	(58.28 cents).
February	27...	3s. 0¼d. (73.48 cents).	2s. 4 d.	(56.76 cents).
March	24...	3s. 0 d. (72.98 cents).	2s. 5¾d.	(60.31 cents).

The last auction of plantation rubber in February, on the 24th and 25th, included the record quantity of 1,326 tons; including 1,070½ Straits and 255½ Ceylon. While the competition was sufficient to absorb the whole of the offerings, prices gave way on an average 2¾d. (5½ cents) per pound; this movement being in sympathy with the gradually declining private market.

An auction slightly larger in total quantity was held on March 10 and 11, when 1,335 tons were disposed of. The offerings included the following descriptions: Malay 950 tons, Ceylon 326 tons, and Java 59 tons. Although the quantity put up was a few tons in excess of that offered at the previous sale, it was all sold at steady prices. Buyers could not in all cases satisfy their requirements.

A large quantity of the rubber being sold is said to be making its way to America. Opinion generally inclines toward the probability of a steady course of prices for some weeks, with the possibility of a subsequent decline. American business is said to be up to the mark as to quantity.

London statistics of plantation rubber show:

	1913.	1914
Stock January 31.....tons	2,697	3,810
February arrivals	2,451	3,550
Total	5,148	7,360
February deliveries	2,184	3,020
Stock February 28.....	2,964	4,340
Arrivals January 1 to February 28.....	5,316	7,400
Deliveries January 1 to February 28.....	4,368	6,380

These figures show that while arrivals during January and February are this year 2,084 tons ahead of last year for the same months, deliveries are larger by 2,012 tons; thus indicating that demand is about keeping pace with supply.

A statistical report to February 28 shows the world's visible supply of Brazilian rubber to be 9,080 tons, as compared with 6,960 tons at the end of January and 8,970 tons on February 28, 1913.

Reports from Brazil show that last year the exports of rubber fell off 15.2 per cent. A still larger decline is anticipated for this year, as the production of the lower grades has ceased to yield any profit.

Details of the Antwerp sale of February 19 show:

Congos—229 tons offered—207 tons sold at 13 per cent. over valuations.

Plantation—200 tons offered—198 tons sold at 4 per cent. over valuations.

Total—429 tons offered—405 tons sold.

The sale was regarded as a satisfactory one for holders. Next

sale was to take place on March 25 and was to include 194 tons Congos and 109 tons plantation.

The Amsterdam sale of March 5 included: *Hevea*—97 tons; *Ficus*—11 tons; *Castilloa*—2 tons; *Getah*—5 tons. Though the market had been quiet for some days, there was keen competition at the sale. Prices realized were, however, 8 to 9 per cent. below valuations. Next sale is fixed for April 1.

At Rotterdam on March 10 there were 48 tons offered, including 18 tons Congo and 28 tons *Hevea*. The latter met with a good demand, while the former was in reduced favor. Next sale will take place on April 1.

At the Havre sale of February 26, demand was fairly good; 24 tons Congo having been sold out of 49 offered with an average advance of about 1½ per cent.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and March 25, the current date:

	April 1, '13.	March 1, '14.	March 25, '14.
PARA.			
Islands, fine, new.....	89@90	70 @71	69 @71
Islands, fine, old.....	.....	.....	.....
Upriver, fine, new.....	92@93	75 @76	74 @75
Upriver, fine, old.....	.....	.....	.....
Islands, coarse, new.....	43@44	32 @	31 @32
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	66@67	46 @47	44 @45
Upriver, coarse, old.....	.....	.....	.....
Cameta	48@49	36 @	35½@36
Caucho (Peruvian) ball..	70@71	47½@48	45 @46
Caucho (Peruvian) sheet..	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet.....	97@	62 @63	64 @65
Fine pale crepe.....	95@	61 @62	63 @64
Fine sheets and biscuits...	92@	61 @	62 @63
CENTRALS.			
Esmeralda, sausage	68@	44 @45	43 @44
Guayaquil, strip .....	.....	.....	.....
Nicaragua, scrap .....	.....	41 @	40 @41
Panama .....	.....	.....	.....
Mexican plantat'n sheet ..	.....	.....	.....
Mexican, scrap .....	.....	42 @43	42 @43
Mexican, slab .....	.....	.....	.....
Mangabeira, sheet .....	.....	.....	.....
Guayule	64@	.....	.....
Balata, sheet .....	.....	.....	.....
Balata, block .....	.....	.....	50 @51
AFRICAN.			
Lopori, ball, prime .....	.....	52 @53	53 @54
Lopori, strip, prime.....	.....	.....	.....
Aruwimi	80@	.....	.....
Upper Congo, ball red....	90@	.....	.....
Ikelemba .....	.....	.....	.....
Sierra Leone, 1st quality ..	.....	.....	.....
Massai, red	88@	49 @50	49 @54
Soudan Niggers .....	.....	48 @50	49 @54
Cameroon, ball	63½@	31 @32	34 @
Benguela	63@	.....	31 @
Madagascar, pinky .....	.....	.....	.....
Accra, flake	25@	22 @23	21 @22
EAST INDIAN.			
Assam	83@	.....	.....
Pontianak	8@	6 @6½	6 @6½
Borneo .....	.....	.....	.....

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho)

STATISTICS FOR THE MONTH OF FEBRUARY

	1914.	1913.	1912.	1911.
	Para. Caucho.	Tons.	Tons.	Tons.
Receipts at Para.....	3,250	1,350	1,500	1,500
Shipments to Liverpool.....	1,670	810	2,480	1,100
Shipments to Continental Ports.....	730	180	800	300
Shipments to America.....	1,300	540	1,840	1,790
American Imports.....	830	0	1,000	1,000
American Deliveries.....	900	110	1,010	1,910
Liverpool Imports.....	1,380	470	1,850	2,029
Liverpool Deliveries.....	1,175	415	1,590	1,439
Continental Imports.....	140	10	150	390
Continental Deliveries.....	170	10	180	390

VISIBLE SUPPLY—1st MARCH, 1914.

	1914.	1913.	1912.	1911.
	Para. Caucho.	Tons.	Tons.	Tons.
Stock in England, Para, 1st hands.....	600	585	1,600	2,156
Para, 2nd hands.....	125	115	364	364
Caucho.....		220	480	490
Stock in Para, 1st hands.....	400	100	1,010	790
2nd hands.....	460	130	780	910
Synthetic.....	810	810	2,240	2,450
Stock in America.....	160	170	820	130
Stock on Continent.....	20	0	60	100
Afloat—Europe.....	1,540	640	1,940	1,680
Afloat—America.....	1,300	530	770	690
	5,415	1,790		

Total Visible Supply, including Caucho. 7,205 7,330 7,880 9,240

CROP STATISTICS 30th JUNE, 1913, & 1st FEBRUARY, 1914.

		Para. Caucho	1913/14	1912/13	1911/12	1910/11
Para Receipts {	1913/14	30,770	4,740			
	1912/13	24,200	4,970	15,310	19,170	15,710
Para Shipments to Europe {	1912/13	10,710	1,970	13,600	15,330	13,300
	1911/12					12,690
Para Shipments to America.....		9,800	1,910	11,710	13,480	13,470
England Landings, net.....			8,805	10,784	9,117	8,961
England Deliveries, net.....			9,675	10,974	12,337	9,239
America Landings, net.....			10,510	13,740	15,175	9,670
America Deliveries, net.....			10,360	13,090	14,945	9,650
Continental Imports, net.....			2,190	2,990	2,250	2,150
Continental Deliveries, net.....			2,420	3,070	2,300	2,100

POSITION 1st MARCH 1914

Decrease in Receipts during February, 1914, against February, 1913..	380
Decrease in Receipts—Crop, July/February, 1913/14, against 1912/13..	3,660
Decrease in Deliveries—Crop, July/February, 1913/14, England and Continent, against 1912/13.....	1,950
Decrease in Deliveries—Crop, July/February, 1913/14, America, against 1912/13.....	2,730
Decrease in Visible Supply Para Grades, against 1st March last year.	125
Decrease in Stock, England, February 28th, 1914, against February 28th, 1913.....	235

WM. WRIGHT & CO., Brokers,

London, 3rd March, 1914.

21, Mincing Lane, London, E.C.

During the month 50 tons Para have been shipped from Europe to America.

*A decrease of 3,430 tons Rubber, and 230 tons Caucho.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS—Prices paid by consumers for carload lots, per pound:

	March 30, '14.
Old rubber boots and shoes—domestic.....	7 3/4 @ 8
Old rubber boots and shoes—foreign.....	7 1/2 @ 7 3/4
Pneumatic bicycle tires.....	4 1/2 @ 4 3/4
Automobile tires.....	5 3/8 @ 5 3/4
Solid rubber wagon and carriage tires.....	5 1/2 @ 5 3/4
White trimmed rubber.....	10 @ 10 1/4
Heavy black rubber.....	3 3/4 @ 4
Air brake hose.....	3 1/4 @ 4
Garden hose.....	1 @ 1 1/4
Fire and large hose.....	2 @ 2 1/8
Matting.....	5 8 @ 3 1/4
No. 1 white auto tires.....	5 1/2 @ 5 3/4
Foreign auto tires.....	5 1/4 @ 5 1/2

Plantation Rubber from the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

From Ceylon to the Continent, 1913, 1912, 1911, 1910, 1909, 1908, 1907, 1906, 1905, 1904, 1903, 1902, 1901, 1900, 1899, 1898, 1897, 1896, 1895, 1894, 1893, 1892, 1891, 1890, 1889, 1888, 1887, 1886, 1885, 1884, 1883, 1882, 1881, 1880, 1879, 1878, 1877, 1876, 1875, 1874, 1873, 1872, 1871, 1870, 1869, 1868, 1867, 1866, 1865, 1864, 1863, 1862, 1861, 1860, 1859, 1858, 1857, 1856, 1855, 1854, 1853, 1852, 1851, 1850, 1849, 1848, 1847, 1846, 1845, 1844, 1843, 1842, 1841, 1840, 1839, 1838, 1837, 1836, 1835, 1834, 1833, 1832, 1831, 1830, 1829, 1828, 1827, 1826, 1825, 1824, 1823, 1822, 1821, 1820, 1819, 1818, 1817, 1816, 1815, 1814, 1813, 1812, 1811, 1810, 1809, 1808, 1807, 1806, 1805, 1804, 1803, 1802, 1801, 1800, 1799, 1798, 1797, 1796, 1795, 1794, 1793, 1792, 1791, 1790, 1789, 1788, 1787, 1786, 1785, 1784, 1783, 1782, 1781, 1780, 1779, 1778, 1777, 1776, 1775, 1774, 1773, 1772, 1771, 1770, 1769, 1768, 1767, 1766, 1765, 1764, 1763, 1762, 1761, 1760, 1759, 1758, 1757, 1756, 1755, 1754, 1753, 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1586, 1585, 1584, 1583, 1582, 1581, 1580, 1579, 1578, 1577, 1576, 1575, 1574, 1573, 1572, 1571, 1570, 1569, 1568, 1567, 1566, 1565, 1564, 1563, 1562, 1561, 1560, 1559, 1558, 1557, 1556, 1555, 1554, 1553, 1552, 1551, 1550, 1549, 1548, 1547, 1546, 1545, 1544, 1543, 1542, 1541, 1540, 1539, 1538, 1537, 1536, 1535, 1534, 1533, 1532, 1531, 1530, 1529, 1528, 1527, 1526, 1525, 1524, 1523, 1522, 1521, 1520, 1519, 1518, 1517, 1516, 1515, 1514, 1513, 1512, 1511, 1510, 1509, 1508, 1507, 1506, 1505, 1504, 1503, 1502, 1501, 1500, 1499, 1498, 1497, 1496, 1495, 1494, 1493, 1492, 1491, 1490, 1489, 1488, 1487, 1486, 1485, 1484, 1483, 1482, 1481, 1480, 1479, 1478, 1477, 1476, 1475, 1474, 1473, 1472, 1471, 1470, 1469, 1468, 1467, 1466, 1465, 1464, 1463, 1462, 1461, 1460, 1459, 1458, 1457, 1456, 1455, 1454, 1453, 1452, 1451, 1450, 1449, 1448, 1447, 1446, 1445, 1444, 1443, 1442, 1441, 1440, 1439, 1438, 1437, 1436, 1435, 1434, 1433, 1432, 1431, 1430, 1429, 1428, 1427, 1426, 1425, 1424, 1423, 1422, 1421, 1420, 1419, 1418, 1417, 1416, 1415, 1414, 1413, 1412, 1411, 1410, 1409, 1408, 1407, 1406, 1405, 1404, 1403, 1402, 1401, 1400, 1399, 1398, 1397, 1396, 1395, 1394, 1393, 1392, 1391, 1390, 1389, 1388, 1387, 1386, 1385, 1384, 1383, 1382, 1381, 1380, 1379, 1378, 1377, 1376, 1375, 1374, 1373, 1372, 1371, 1370, 1369, 1368, 1367, 1366, 1365, 1364, 1363, 1362, 1361, 1360, 1359, 1358, 1357, 1356, 1355, 1354, 1353, 1352, 1351, 1350, 1349, 1348, 1347, 1346, 1345, 1344, 1343, 1342, 1341, 1340, 1339, 1338, 1337, 1336, 1335, 1334, 1333, 1332, 1331, 1330, 1329, 1328, 1327, 1326, 1325, 1324, 1323, 1322, 1321, 1320, 1319, 1318, 1317, 1316, 1315, 1314, 1313, 1312, 1311, 1310, 1309, 1308, 1307, 1306, 1305, 1304, 1303, 1302, 1301, 1300, 1299, 1298, 1297, 1296, 1295, 1294, 1293, 1292, 1291, 1290, 1289, 1288, 1287, 1286, 1285, 1284, 1283, 1282, 1281, 1280, 1279, 1278, 1277, 1276, 1275, 1274, 1273, 1272, 1271, 1270, 1269, 1268, 1267, 1266, 1265, 1264, 1263, 1262, 1261, 1260, 1259, 1258, 1257, 1256, 1255, 1254, 1253, 1252, 1251, 1250, 1249, 1248, 1247, 1246, 1245, 1244, 1243, 1242, 1241, 1240, 1239, 1238, 1237, 1236, 1235, 1234, 1233, 1232, 1231, 1230, 1229, 1228, 1227, 1226, 1225, 1224, 1223, 1222, 1221, 1220, 1219, 1218, 1217, 1216, 1215, 1214, 1213, 1212, 1211, 1210, 1209, 1208, 1207, 1206, 1205, 1204, 1203, 1202, 1201, 1200, 1199, 1198, 1197, 1196, 1195, 1194, 1193, 1192, 1191, 1190, 1189, 1188, 1187, 1186, 1185, 1184, 1183, 1182, 1181, 1180, 1179, 1178, 1177, 1176, 1175, 1174, 1173, 1172, 1171, 1170, 1169, 1168, 1167, 1166, 1165, 1164, 1163, 1162, 1161, 1160, 1159, 1158, 1157, 1156, 1155, 1154, 1153, 1152, 1151, 1150, 1149, 1148, 1147, 1146, 1145, 1144, 1143, 1142, 1141, 1140, 1139, 1138, 1137, 1136, 1135, 1134, 1133, 1132, 1131, 1130, 1129, 1128, 1127, 1126, 1125, 1124, 1123, 1122, 1121, 1120, 1119, 1118, 1117, 1116, 1115, 1114, 1113, 1112, 1111, 1110, 1109, 1108, 1107, 1106, 1105, 1104, 1103, 1102, 1101, 1100, 1099, 1098, 1097, 1096, 1095, 1094, 1093, 1092, 1091, 1090, 1089, 1088, 1087, 1086, 1085, 1084, 1083, 1082, 1081, 1080, 1079, 1078, 1077, 1076, 1075, 1074, 1073, 1072, 1071, 1070, 1069, 1068, 1067, 1066, 1065, 1064, 1063, 1062, 1061, 1060, 1059, 1058, 1057, 1056, 1055, 1054, 1053, 1052, 1051, 1050, 1049, 1048, 1047, 1046, 1045, 1044, 1043, 1042, 1041, 1040, 1039, 1038, 1037, 1036, 1035, 1034, 1033, 1032, 1031, 1030, 1029, 1028, 1027, 1026, 1025, 1024, 1023, 1022, 1021, 1020, 1019, 1018, 1017, 1016, 1015, 1014, 1013, 1012, 1011, 1010, 1009, 1008, 1007, 1006, 1005, 1004, 1003, 1002, 1001, 1000, 999, 998, 997, 996, 995, 994, 993, 992, 991, 990, 989, 988, 987, 986, 985, 984, 983, 982, 981, 980, 979, 978, 977, 976, 975, 974, 973, 972, 971, 970, 969, 968, 967, 966, 965, 964, 963, 962, 961, 960, 959, 958, 957, 956, 955, 954, 953, 952, 951, 950, 949, 948, 947, 946, 945, 944, 943, 942, 941, 940, 939, 938, 937, 936, 935, 934, 933, 932, 931, 930, 929, 928, 927, 926, 925, 924, 923, 922, 921, 920, 919, 918, 917, 916, 915, 914, 913, 912, 911, 910, 909, 908, 907, 906, 905, 904, 903, 902, 901, 900, 899, 898, 897, 896, 895, 894, 893, 892, 891, 890, 889, 888, 887, 886, 885, 884, 883, 882, 881, 880, 879, 878, 877, 876, 875, 874, 873, 872, 871, 870, 869, 868, 867, 866, 865, 864, 863, 862, 861, 860, 859, 858, 857, 856, 855, 854, 853, 852, 851, 850, 849, 848, 847, 846, 845, 844, 843, 842, 841, 840, 839, 838, 837, 836, 835, 834, 833, 832, 831, 830, 829, 828, 827, 826, 825, 824, 823, 822, 821, 820, 819, 818, 817, 816, 815, 814, 813, 812, 811, 810, 809, 808, 807, 806, 805, 804, 803, 802, 801, 800, 799, 798, 797, 796, 795, 794, 793, 792, 791, 790, 789, 788, 787, 786, 785, 784, 783, 782, 781, 780, 779, 778, 777, 776, 775, 774, 773, 772, 771, 770, 769, 768, 767, 766, 765, 764, 763, 762, 761, 760, 759, 758, 757, 756, 755, 754, 753, 752, 751, 750, 749, 748, 747, 746, 745, 744, 743, 742, 741, 740, 739, 738, 737, 736, 735, 734, 733, 732, 731, 730, 729, 728, 727, 726, 725, 724, 723, 722, 721, 720, 719, 718, 717, 716, 715, 714, 713, 712, 711, 710, 709, 708, 707, 706, 705, 704, 703, 702, 701, 700, 699, 698, 697, 696, 695, 694, 693, 692, 691, 690, 689, 688, 687, 686, 685, 684, 683, 682, 681, 680, 679, 678, 677, 676, 675, 674, 673, 672, 671, 670, 669, 668, 667, 666, 665, 664, 663, 662, 661, 660, 659, 658, 657, 656, 655, 654, 653, 652, 651, 650, 649, 648, 647, 646, 645, 644, 643, 642, 641, 640, 639, 638, 637, 636, 635, 634, 633, 632, 631, 630, 629, 628, 627, 626, 625, 624, 623, 622, 621, 620, 619, 618, 617, 616, 615, 614, 613, 612, 611, 610, 609, 608, 607, 606, 605, 604, 603, 602, 601, 600, 599, 598, 597, 596, 595, 594, 593, 592, 591, 590, 589, 588, 587, 586, 585, 584, 583, 582, 581, 580, 579, 578, 577, 576, 575, 574, 573, 572, 571, 570, 569, 568, 567, 566, 565, 564, 563, 562, 561, 560, 559, 558, 557, 556, 555, 554, 553, 552, 551, 550, 549, 548, 547, 546, 545, 544, 543, 542, 541, 540, 539, 538, 537, 536, 535, 534, 533, 532, 531, 530, 529, 528, 527, 526, 525, 524, 523, 522, 521, 520, 519, 518, 517, 516, 515, 514, 513, 512, 511, 510, 509, 508, 507, 506, 505, 504, 503, 502, 501, 500, 499, 498, 497, 496, 495, 494, 493, 492, 491, 490, 489, 488, 487, 486, 485, 484, 483, 482, 481, 480, 479, 478, 477, 476, 475, 474, 473, 472, 471, 470, 469, 468, 467, 466, 465, 464, 463, 462, 461, 460, 459, 458, 457, 456, 455, 454, 453, 452, 451, 450, 449, 448, 447, 446, 445, 444, 443, 442, 441, 440, 439, 438, 437, 436, 435, 434, 433, 432, 431, 430, 429, 428, 427, 426, 425, 424, 423, 422, 421, 420, 419, 418, 417, 416, 415, 414, 413, 412, 411, 410, 409, 408, 407, 406, 405, 404, 403, 402, 401, 400, 399, 398, 397, 396, 395, 394, 393, 392, 391, 390, 389, 388, 387, 386, 385, 384, 383, 382, 381, 380, 379, 378, 377, 376, 375, 374, 373, 372, 371, 370, 369, 368, 367, 366, 365, 364, 363, 362, 361, 360, 359, 358, 357, 356, 355, 354, 353, 352, 351, 350, 349, 348, 347, 346, 345, 344, 343, 342, 341, 34

IMPORTS FROM PARA AT NEW YORK.

MARCH 9.—By the steamer *Javary* from Pará, Manáos and Iquitos:

MARCH 2.—By the steamer <i>Denis</i> from Pará and Manáos:											
	Fine.	Medium.	Coarse.	Caucho.	Total.		Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	41,000		255,100	245,900=	1,152,500	Arnold & Zeiss	97,000	55,200	89,600	52,300=	294,300
General Rubber Co.	22,100		151,700	188,000=	383,000	General Rubber Co.	44,000		700	200=	44,900
Meyer & Brown			18,000		18,000	Meyer & Brown	7,000	12,400	97,500	113,500=	296,300
H. A. Astlett & Co.			145,700	62,000=	261,600	H. A. Astlett & Co.	14,500	4,600	67,500	28,900=	115,500
Henderson & Korn			26,700	32,400=	138,300	Henderson & Korn	33,000	18,500	32,500	37,000=	121,000
Robinson & Co.	22,100	2,100	20,700	2,800=	47,700	Robinson & Co.	11,400	11,400	13,700	26,100=	100,600
G. Amsinck & Co.			11,000		11,900	G. Amsinck & Co.	11,400	400		238,400=	250,200
W. R. Grace & Co.			42,800		76,500	W. R. Grace & Co.	8,900	700	7,100	19,800=	36,500
H. C. Kopp			7,300		76,500	H. C. Kopp				1,600=	1,600
F. Probst & Co.			12,000=	77,000		F. Probst & Co.			1,100	2,300=	3,400
Johnstone, Whitworth & Co.	47,400	10,100	7,500	17,500=	276,000	Johnstone, Whitworth & Co.	18,200	4,400	18,300	29,900=	70,800
Total	914,000	286,600	724,100	560,600=	2,485,300	Total	340,000	107,600	328,000	550,000=	1,335,100

PARA RUBBER VIA EUROPE.

MARCH 4.—By the <i>Panama</i> =Colon:				MARCH 7.—By the <i>Mexico</i> =Mexico:			
	Pounds.						
Meyer & Brown (Fine).....	10,000			Meyer & Brown.....	2,200		
Johnstone, Whitworth & Co. (Fine).....	2,200	12,200		General Export & Com. Co.....	1,500		
FEBRUARY 24.—By the <i>Cedric</i> =Liverpool:				G. Amsinck & Co.....	400		
Henderson & Korn (Fine).....	27,000			American Trading Co.....	500		
Raw Products Co. (Coarse).....	60,000			Harburger & Stack.....	1,000		
Raw Products Co. (Fine).....	11,200			Various	4,500	14,300	
Robinson & Co. (Fine).....	11,200	109,400		MARCH 9.—By the <i>Allianca</i> =Colon:			
FEBRUARY 25.—By the <i>President Lincoln</i> =Hamburg:				W. R. Grace & Co.....	1,500		
Meyer & Brown (Fine).....	80,000			MARCH 9.—By the <i>Alcantara</i> =Colon:			
Arnold & Zeiss (Fine).....	22,500			Various	1,500		
Rubber & Guayule Agency, Inc.	15,000			MARCH 10.—By the <i>Indian Prince</i> =Bahia:			
Various (Fine).....	3,500	121,000		Adolph Hirsch & Co.....	18,000		
MARCH 6.—By the <i>Georgic</i> =Liverpool:				MARCH 10.—By the <i>Cecilia</i> =Bahia:			
Robinson & Co. (Fine).....	11,200			Adolph Hirsch & Co.....	11,200		
Johnstone, Whitworth & Co. (Coarse).....	13,500	24,700		R. W. Wallace & Son Mfg. Co..	2,200	13,400	
MARCH 7.—By the <i>Graf Waldersee</i> =Hamburg:				MARCH 11.—By the <i>Prinz Joachim</i> =Colon:			
Henderson & Korn (Fine).....	11,200			J. S. Sembrada & Co.....	3,000		
Rubber & Guayule Agency, Inc.	14,300			Andean Trading Co.....	4,000	7,000	
Ed. Maurer (Fine).....	7,500			MARCH 12.—By the <i>Danube</i> =Colon:			
Arnold & Zeiss (Fine).....	21,000			G. Amsinck & Co.....	3,000	3,500	
Raw Products Co. (Fine).....	20,000			Gravenhorst & Co.....	500		
Various (Fine).....	7,000	81,200		MARCH 14.—By the <i>Montezuma</i> =Mexico:			
MARCH 9.—By the <i>Baltic</i> =Liverpool:				E. Steiger & Co.....	5,000		
Meyer & Brown (Fine).....	8,000			G. Amsinck & Co.....	500	5,700	
Johnstone, Whitworth & Co. (Coarse).....	4,500	23,700		Harburger & Stack.....	200		
MARCH 10.—By the <i>Indra</i> =Colon:				MARCH 14.—By the <i>Indra</i> =Colon:			
Robert Badenhop (Fine).....	11,200			G. Amsinck & Co.....	1,500	1,800	
MARCH 16.—By the <i>Amerika</i> =Hamburg:				H. W. Peabody & Co.....	300		
Henderson & Korn (Fine).....	8,500			MARCH 16.—By the <i>Saramacca</i> =Puerto Cortes:			
Various (Fine).....	4,500	13,000		Wessels, Kulenkampff & Co.....	500	700	
MARCH 16.—By the <i>Armenian</i> =Liverpool:				G. Amsinck & Co.....	200		
Henderson & Korn (Fine).....	16,500			MARCH 16.—By the <i>Prinz</i> =Bahia:			
Johnstone, Whitworth & Co. (Fine).....	11,200			J. H. Rosshach Bros. & Co.....	65,000		
Raw Products Co. (Fine).....	70,000			MARCH 18.—By the <i>Prinz</i> =Colon:			
Raw Products Co. (Coarse).....	11,200	108,900		G. Amsinck & Co.....	3,000		
MARCH 17.—By the <i>Dortmund</i> =Hamburg:				MARCH 20.—By the <i>Morro Castle</i> =Mexico:			
Henderson & Korn (Fine).....	10,000			Herman Kluge.....	500		
Various (Fine).....	4,500	14,500		MARCH 20.—By the <i>Metapan</i> =Colombia:			

OTHER NEW YORK ARRIVALS.

CENTRALS.				AFRICAN.			
	Pounds.						
Adolph Hirsch & Co.....	65,000			FEBRUARY 19.—By the <i>Prinz</i> =Colon:			
FEBRUARY 21.—By the <i>Morro Castle</i> =Mexico:				Arnold & Zeiss.....	7,000		
H. Marquardt & Co.....	500			General Rubber Co.....	13,500	20,500	
FEBRUARY 21.—By the <i>Prinz Sigismund</i> =Colon:				FEBRUARY 20.—By the <i>New York</i> =Southampton:			
A. Held.....	2,000			Arnold & Zeiss.....	17,000		
De Lima Cortissoz & Co.....	1,500			Various	11,000		
Pottberg, Ebeling & Co.....	3,500	7,000		FEBRUARY 24.—By the <i>Cestrian</i> =Liverpool:			
MARCH 4.—By the <i>Emil L. Boas</i> =Colon:				Robinson & Co.....	15,000		
Rosenthal & Sons.....	1,100			FEBRUARY 24.—By the <i>Cedric</i> =Liverpool:			
J. S. Sembrada & Co.....	2,000	3,100		Meyer & Brown.....	22,500		

AFRICAN.

CENTRALS.				AFRICAN.			
	Pounds.						
Adolph Hirsch & Co.....	65,000			FEBRUARY 19.—By the <i>Prinz</i> =Colon:			
FEBRUARY 21.—By the <i>Morro Castle</i> =Mexico:				Arnold & Zeiss.....	7,000		
H. Marquardt & Co.....	500			General Rubber Co.....	13,500	20,500	
FEBRUARY 21.—By the <i>Prinz Sigismund</i> =Colon:				FEBRUARY 20.—By the <i>New York</i> =Southampton:			
A. Held.....	2,000			Arnold & Zeiss.....	17,000		
De Lima Cortissoz & Co.....	1,500			Various	11,000		
Pottberg, Ebeling & Co.....	3,500	7,000		FEBRUARY 24.—By the <i>Cestrian</i> =Liverpool:			
MARCH 4.—By the <i>Emil L. Boas</i> =Colon:				Robinson & Co.....	15,000		
Rosenthal & Sons.....	1,100			FEBRUARY 24.—By the <i>Cedric</i> =Liverpool:			
J. S. Sembrada & Co.....	2,000	3,100		Meyer & Brown.....	22,500		

EAST INDIAN.

[*Denotes plantation rubber.]

CENTRALS.				AFRICAN.			
	Pounds.						
Adolph Hirsch & Co.....	65,000			FEBRUARY 19.—By the <i>Prinz</i> =Colon:			
FEBRUARY 21.—By the <i>Morro Castle</i> =Mexico:				Arnold & Zeiss.....	7,000		
H. Marquardt & Co.....	500			General Rubber Co.....	13,500	20,500	
FEBRUARY 21.—By the <i>Prinz Sigismund</i> =Colon:				FEBRUARY 20.—By the <i>New York</i> =Southampton:			
A. Held.....	2,000			Arnold & Zeiss.....	17,000		
De Lima Cortissoz & Co.....	1,500			Various	11,000		
Pottberg, Ebeling & Co.....	3,500	7,000		FEBRUARY 24.—By the <i>Cestrian</i> =Liverpool:			
MARCH 4.—By the <i>Emil L. Boas</i> =Colon:				Robinson & Co.....	15,000		
Rosenthal & Sons.....	1,100			FEBRUARY 24.—By the <i>Cedric</i> =Liverpool:			
J. S. Sembrada & Co.....	2,000	3,100		Meyer & Brown.....	22,500		

FEBRUARY 24.—By the *Minneapolis*=London:

Meyer & Brown.....	*6,000
Charles T. Wilson.....	*11,200
General Rubber Co.....	*103,000
Johnstone, Whitworth & Co.....	*20,000
Ed. Maurer.....	*20,000
Various.....	*12,500

FEBRUARY 24.—By the *St. Paul*=Southampton:

W. R. Grace & Co.....	*12,500
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FEBRUARY 25.—By the *Minneapolis*=London:

Meyer & Brown.....	*57,000
Adolph Hirsch & Co.....	*11,200
Henderson & Korn.....	*60,000
Raw Products Co.....	*2,200
Charles T. Wilson.....	*25,000
Arnold & Zeiss.....	*10,000
W. R. Grace & Co.....	*10,000
Rubber & Guayule Agency, Inc.....	*10,000
Ed. Maurer.....	*28,000
Ed. Boustead & Co.....	*17,000
Johnstone, Whitworth & Co.....	*37,500
Various.....	*78,500

FEBRUARY 25.—By the *President Lincoln*=Hamburg:

Rubber & Guayule Agency, Inc.....	*6,000
Various.....	*14,000

FEBRUARY 26.—By the *Yampi*=Southampton:

Arnold & Zeiss.....	*280,000
Rubber Trading Co.....	*44,000
Various.....	*16,000

FEBRUARY 26.—By the *Norwich*=Colombo:

Rubber Trading Co.....	*17,500
Arnold & Zeiss.....	*23,500
Various.....	*78,500

FEBRUARY 28.—By the *Indrakula*=Singapore:

Meyer & Brown.....	*107,000
Henderson & Korn.....	*107,000
Arnold & Zeiss.....	*65,000
Ed. Maurer.....	*14,000
Malaysian Rubber Co.....	*1,200
Hadden & Co.....	*15,000
Ed. Boustead & Co.....	*7,000
Robinson & Co.....	*5,600
Henderson & Korn.....	*11,200
Various.....	*37,000

MARCH 2.—By the *Minneapolis*=London:

General Rubber Co.....	*30,000
Johnstone, Whitworth & Co.....	*132,000
Henderson & Korn.....	*16,000
Ed. Maurer.....	*6,000
Ed. Boustead & Co.....	*42,000
Charles T. Wilson.....	*20,000
W. R. Grace & Co.....	*20,000
Various.....	*18,500

MARCH 2.—By the *Philadelphia*=Southampton:

Arnold & Zeiss.....	*97,000
Robinson & Co.....	*28,500
Charles T. Wilson.....	*28,500
W. R. Grace & Co.....	*40,500
Rubber & Guayule Agency, Inc.....	*25,600
Ed. Maurer.....	*7,000
Rubber Trading Co.....	*17,500
Various.....	*230,100

MARCH 3.—By the *Gothland*=Antwerp:

Meyer & Brown.....	*250,000
Various.....	*33,500

MARCH 4.—By the *Kyren*=Antwerp:

Meyer & Brown.....	*220,000
Arnold & Zeiss.....	*10,000
Various.....	*1,000

MARCH 5.—By the *Kyren*=Antwerp:

Manhattan Rubber Mfg. Co.....	*5,000
Robinson & Co.....	*5,000
Robert Badenhop.....	*1,200
Various.....	*17,700

MARCH 6.—By the *St. Paul*=Southampton:

Meyer & Brown.....	*3,500
W. R. Grace & Co.....	*19,000
Charles T. Wilson.....	*17,000
Henderson & Korn.....	*6,500
Arnold & Zeiss.....	*16,000

MARCH 6.—By the *City of Norwich*=Colombo:

Meyer & Brown.....	*95,000
Henderson & Korn.....	*40,000
W. R. Grace & Co.....	*52,000
Robinson & Co.....	*2,200
Various.....	*23,500

MARCH 7.—By the *Graf Waldersee*=Hamburg:

Rubber & Guayule Agency, Inc.....	*18,000
Ed. Maurer.....	*10,000

MARCH 9.—By the *Kaiserin Auguste Victoria*=Hamburg:

Charles T. Wilson.....	*4,000
Various.....	*5,000

MARCH 10.—By the *Mesaba*=London:

Meyer & Brown.....	*34,000
Charles T. Wilson.....	*67,000
Adolph Hirsch & Co.....	*13,500
Henderson & Korn.....	*70,000
J. H. Rossbach & Bros.....	*14,500
Johnstone, Whitworth & Co.....	*55,000
General Rubber Co.....	*77,500
Ed. Boustead & Co.....	*4,000
Ed. Maurer.....	*11,200
Ed. Maurer.....	*11,000

MARCH 10.—By the *Indrakula*=Singapore:

Meyer & Brown.....	*17,000
Henderson & Korn.....	*69,000
Hadden & Co.....	*4,500
Ed. Boustead & Co.....	*45,000
L. Littlejohn & Co.....	*37,000
Various.....	*79,000

MARCH 11.—By the *Caroline*=Havre:

Michelin Tire Co.....	*75,000
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MARCH 12.—By the *Chicago*=Havre:

Meyer & Brown.....	*245,000
Arnold & Zeiss.....	*28,000
Rubber & Guayule Agency, Inc.....	*16,000
Malaysian Rubber Co.....	*22,500
Rubber Trading Co.....	*17,000

MARCH 12.—By the *Chicago*=Havre:

Meyer & Brown.....	*25,000
W. H. Stiles.....	*14,000
Ed. Maurer.....	*49,000
Arnold & Zeiss.....	*535,000
Henderson & Korn.....	*35,000
Earle Bros.....	*20,000
W. R. Grace & Co.....	*80,000
Rubber & Guayule Agency, Inc.....	*11,200

MARCH 13.—By the *Chicago*=Havre:

Michelin Tire Co.....	*22,500
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MARCH 13.—By the *St. Patrick*=Singapore:

Meyer & Brown.....	*5,500
Arnold & Zeiss.....	*105,000
United Malaysian Rub. Co.....	*3,500
Ed. Maurer.....	*8,000
W. Stiles.....	*6,000
Henderson & Korn.....	*63,000
Various.....	*36,000

MARCH 16.—By the *Pretoria*=Hamburg:

Rubber & Guayule Agency, Inc.....	*5,000
Various.....	*4,500

MARCH 16.—By the *America*=Hamburg:

Henderson & Korn.....	*22,500
Various.....	*5,000

MARCH 17.—By the *Dortmund*=Hamburg:

Meyer & Brown.....	*11,200
Various.....	*6,500

MARCH 17.—By the *Minneapolis*=London:

Meyer & Brown.....	*28,000
W. R. Grace & Co.....	*67,000
Charles T. Wilson.....	*80,000
Ed. Boustead & Co.....	*6,000
Johnstone, Whitworth & Co.....	*70,000
Henderson & Korn.....	*65,000
General Rubber Co.....	*350,000
Robinson & Co.....	*20,000
Arnold & Zeiss.....	*125,000
Raw Products Co.....	*4,500
Various.....	*22,500

MARCH 18.—By the *Zeeland*=Antwerp:

Meyer & Brown.....	*139,500
Arnold & Zeiss.....	*30,000
Rubber & Guayule Agency, Inc.....	*7,000

MARCH 18.—By the *London*=Antwerp:

Meyer & Brown.....	*17,000
Various.....	*2,000

MARCH 20.—By the *New York*=Southampton:

Meyer & Brown.....	*15,000
Ed. Maurer.....	*17,000
W. R. Grace & Co.....	*82,000
Arnold & Zeiss.....	*50,000

MARCH 20.—By the *London*=Antwerp:

Meyer & Brown.....	*63,000
Henderson & Korn.....	*26,500
H. W. Peabody & Co.....	*8,000
W. R. Grace & Co.....	*105,000
Rubber & Guayule Agency, Inc.....	*18,000
Robinson & Co.....	*26,000
W. Stiles.....	*8,500
Adolph Hirsch & Co.....	*13,000
Various.....	*27,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—FEBRUARY, 1914.

Imports:	Pounds.	Value.
India-rubber	10,346,929	\$5,302,665
Balata	102,590	50,350
Guayule		
Gutta-percha	71,983	27,607
Gutta-jelutong (Pontianak) ..	1,105,702	54,388
Total	11,627,204	\$5,435,010

Exports:	Pounds.	Value.
India-rubber	140,606	87,942
Balata	30,774	18,384
Guayule		
Gutta-percha		
Reclaimed rubber	58,240	9,083
Gutta-jelutong (Pontianak) ..		
Rubber scrap, imported.....	693,387	60,585
Rubber scrap, exported.....	373,252	26,028

BOSTON ARRIVALS.

IMPORTS IN FEBRUARY 1914.

	Pounds.	Value.
Gutta-jelutong	1,105,702	54,388
Gutta-percha	12,000	1,557
India-rubber		

EXPORTS OF INDIA-RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS FOR JANUARY, 1914 (IN KILOGRAMS).

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTAL.
	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	
Zarges, Berringer & Co.....	168,236	49,125	204,994	40,932	463,287	306,999	36,565	19,949	48,606	412,119	875,406
General Rubber Co. of Brazil.....	89,989	14,076		66,506	213,013	25,793	4,044	7,288		49,428	262,441
J. Marques.....	116,205	27,421	168,926	50,471	363,023	124,252	3,230	16,830	19,784	164,096	527,119
Seligmann & Co.....	6,190			18,913	25,103	35,107		4,575		39,682	64,785
Suarez Hermanos & Co., Ltd.....	29,769			450	34,767	35,818		284		38,568	118,335
De Lagotellerie & Co.....						27,610	850			28,460	23,460
Pires Teixeira & Co.....	32,280	5,440	109,580	560	143,860	39,270		7,920		47,190	195,030
Sundry exporters.....	6,630	170	4,290	1,680	12,770			2,310	380	2,690	15,360
Itacatiara, direct.....						15,580	2,234	9,563	5,817	33,194	33,194
Manaos, direct.....	449,299	96,172	534,840	179,512	1,259,823	605,439	46,923	81,719	121,246	855,327	2,115,150
Manaos, direct.....	465,568	106,220	157,728	58,842	788,358	489,138	99,687	85,437	170,028	844,290	1,632,648
Total.....	1,146,867	202,342	1,007,662	238,354	2,048,181	1,094,577	146,646	167,156	291,274	1,699,617	3,747,798



Vol. 50.

APRIL 1, 1914.

No. 1.

TABLE OF CONTENTS.

Editorials:

The Awakening of the Amazon.....	337
The Responsiveness of the Dump Heap.....	337
Four Months of the New Tariff.....	338
The American Consumption of Rubber.....	338
A Genuinely Helpful Sort of Help.....	338
The Annual Show Losing Favor.....	339
The Latest Exploit of Inventive Genius.....	339
What the Rubber Chemists Are Doing	340
Manufacture and Properties of Sublimed White Lead.....	340
The Rubber Crisis in Brazil.....	341
Dr. Jacques Huber's Busy and Useful Life.....	348
Gold Coast Rubber and Water.....	350
Another American Speaks His Mind About Mexico.....	351
The Editor's Book Table.....	352
New Trade Publications.....	355
The Rubber Trade in Akron.....	357
The Rubber Trade in Boston.....	358
The Rubber Trade in Chicago.....	359
The Rubber Trade in Rhode Island.....	359
The Rubber Trade in Trenton.....	360
The Rubber Trade on the Pacific Coast.....	361
Rubber Consumption Per Head of Population.....	362
India Rubber Goods in Commerce.....	362
The United States Rubber Annual Meeting.....	362
The Report of the United States Rubber Co.....	363
Poel & Arnold's Judgment Affirmed on Appeal.....	365
Action of Acid Mine Water on Insulation of Electric Conductors.....	365
The Waste Material Dealers Dine.....	366
The Obituary Record.....	367
News of the American Rubber Trade.....	369
New Machines and Appliances.....	376
New Rubber Goods in the Market.....	378
The India Rubber Trade in Great Britain.....	379
Some Rubber Interests in Europe.....	381
Ritter, Ritter & Co.'s Review and Forecast.....	383
Rubber Growers' Association.....	383
A New Pacific Source of Rubber.....	384
Rubber Notes from British Guiana.....	386
Some Rubber Planting Notes.....	387
Notes from the Cotton Trade.....	388
Recent Patents Relating to Rubber.....	389
Review of the Crude Rubber Market.....	393

Antwerp.

RUBBER STATISTICS FOR FEBRUARY, 1914					
Details.	1914.	1913.	1912.	1911.	1910.
Stocks, January 1..kilos.	420,958	463,752	586,056	645,419	482,162
Arrivals in February.....					
Congo sorts.....	135,680	197,713	331,775	172,078	454,116
Other sorts.....	9,056	5,818	16,781	18,621	43,047
Plantation sorts.....	230,415	145,907	117,747	45,617	17,461
Aggregating	796,109	813,190	1,052,359	881,735	996,786
Sales in February.....	426,607	251,901	530,403	342,528	480,252
Stocks, February 28.....	369,502	561,289	521,956	539,207	516,534
Arrivals since January 1—					
Congo sorts.....	422,253	519,320	558,023	575,499	656,663
Other sorts.....	34,655	18,463	22,976	100,835	48,703
Plantation sorts.....	439,897	284,212	206,737	109,938	71,125
Aggregating	896,805	821,995	787,736	786,272	776,491
Sales since January 1....	1,086,584	771,766	940,518	835,277	801,469

RUBBER ARRIVALS FROM THE CONGO.

FEBRUARY 11. By the steamer <i>Elizabethville</i> :		
Messrs. Bunge & Co.....	(Cie du Congo belge) kilos	780
do	(Belgika)	3,100
do	(Grands Lacs)	5,700
do	(Forminière)	1,000
Société Coloniale Anversoise.....	(Kasai)	40,400
do	(Communière)	12,700
do	(Intertropical)	13,600
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	(Comfina)	15,600
do	(Crevelde)	4,350
do	(Velde)	780
Comptoir Colonial franco-belge.....	(Charles Dethier)	180
do	(American Congo Cy)	1,025
MARCH 3.—By the steamer <i>Anversville</i> :		
Bunge & Co.....	(La Kotto) kilos	3,070
do	(Comp. Commercial Congolais)	27,600
do	(Cie du Congo belge)	270
do	(Forminière)	4,600
do	(Grands Lacs)	1,180
do	(Comfina)	5,300
do	(Intertropical)	12,700
Société Coloniale Anversoise.....	(Communière)	5,000
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	(Kasai)	38,900
do	(Crevelde)	8,900
Comptoir Colonial franco-belge (Charles Dethier)	(American Congo Cy)	4,900
Willart Frères		3,000
Compt. d'Irebu		600
		116,020

A HIGH PRESSURE PATCH CLAMP.

While good cement and patches or rubber compound are essential to efficient tire repairs, a certain amount of pressure is also necessary where heat by means of a vulcanizer is not applied. The illustration shows a high pressure clamp which is used in connection with a rubber compound called "Tire-Sav," a substance of about the consistency of dough. A patch of this compound is soft and pliable when applied and makes a very close union with the surface of the inner tube. The outer edge of the patch is pressed out so thin by means of the clamp that it cannot catch on the casing and be torn off if the tube should creep in the tire. The outfit consists of a supply of "Tire-Sav" self-curing cement, the clamp, and a die on the lower end of the screw to give shape to the finished patch. [National Cement & Rubber Co., Toledo, O.]



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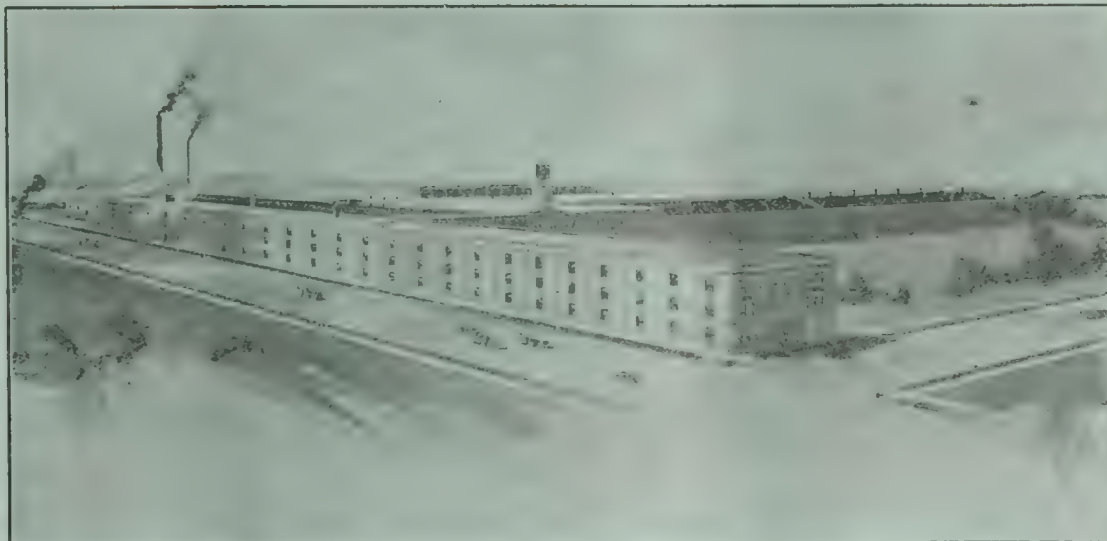
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 The Berlin Rubber Manufacturing Co., Limited, Berlin, Ont.
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TABLE OF CONTENTS ON LAST PAGE OF READING.

THE TREMENDOUS TOLL THAT RUBBER HAS PAID.

IN the first chapter of "The Rubber Crisis in Brazil," which appeared in our April issue, the opinions—given during long and familiar interviews—of several prominent Brazilians were quoted. These men, who speak of Amazon rubber matters with the authority of intimate personal knowledge extending over many years, deny that Brazil's present unhappy condition is due to any failure on the part of its citizens to foresee the coming crisis, for it has been freely prophesied and openly discussed for several years. The fault has not been one of blindness but of the failure to adopt any adequate remedy. They attribute their present troubles partly to the tremendous disadvantages in the lack of capital and labor against which this region has always struggled, partly to the indiscretions of officials who have spent their appropriations for spectacular rather than for substantial results, and partly to the great burden of federal taxation, which one of the men quoted in the letter places, for the last thirty years, at \$350,000,000.

This vast amount of money which it is stated northern Brazil has contributed to southern Brazil during the past

three decades if put into rubber plantations, on the basis of Eastern estimates—viz., that an acre of rubber trees can be brought into bearing for \$150—would have given Brazil plantations aggregating two and a third million acres, or nearly twice the acreage of the East. But to contemplate where Brazil would stand today if \$350,000,000 had gone into rubber plantations instead of into government coffers is, of course, pure speculation, interesting but not practically profitable.

GEORGE P. WHITMORE—AN APPRECIATION.

THE leaders of men, the rich, the successful, never lack biographers and eulogists, and this is as it should be. One lives occasionally, however, not a leader, not wealthy, and in whom the ability to create great enterprises is absent, who is yet possessed of such qualities of mind and heart that appreciation is spontaneous, and all who knew him are eulogists. Such a man was George Whitmore. From the beginning of his business career his vocation was to serve rather than to be served. For years the burden of endless and intricate detail rested upon his broad shoulders. With infinite care, without hurry, he conscientiously and thoroughly discharged every duty, mastered each detail. His friendliness, unaffected interest and honesty of purpose were never questioned. In business, home and social life he was ever thoughtful, painstaking, steadfast. Without impatience he finished the half-done tasks of others, corrected their mistakes, remembered when they forgot. He tempered the rashness of the strong by calm counsel, and strengthened the weak with no hurt to their sensitive self-respect. An everyday, matter-of-fact soul, he was a very genius of kindness, courtesy, charity—a humanitarian in every fibre of his being. His one dream of wealth, known to but a few, vanished and left no trace of bitterness, no shade of repining. The warm hand clasp, the slow smile, the gratification over the success of others, were just as hearty and genuine as ever. He was a leader in the honest discharge of duty, rich in friends, and successful in that he possessed a manliness, truth and integrity that few of the world's great attain to.

THE GREAT INCREASE IN FOREIGN COTTON.

RUBBER and cotton are such constant companions—each finding the other so essential for its own efficiency in a great many lines of manufacture—that any pronounced development in the cotton world must

perforce be of interest to the rubber manufacturer.

In the *INDIA RUBBER WORLD* of last November attention was called to the great proportionate increase in the production of foreign cotton over American cotton, and it was pointed out that the cotton production of India—which in 1910 amounted to 1,400,000 bales—would for the present season probably reach 6,000,000 bales. Recent information brings to light such a pronounced increase in cotton growing in another eastern quarter that it now seems necessary to concede that the position which America has held for a hundred years, of producing the larger part of the cotton supply of the world, can no longer be maintained, as the combined production from foreign fields will undoubtedly this year surpass that of our Southern States.

For a number of years past the entire cotton production of the world has been placed in the neighborhood of 22,000,000 bales, of which the United States produced two-thirds. During all these years several foreign governments—particularly England, France and Germany—have made supreme efforts to inaugurate cotton growing on a large and profitable scale in their various colonies. England especially has spent a vast sum of money in this endeavor, and has met with a certain measure of success—in Egypt and in Southern India. But outside of these two localities these government operations have not resulted in a satisfactory way, and the Southern States have felt secure in their supremacy. But it appears now that in a distant quarter of the globe which has been considered almost negligible and as in no way threatening American cotton domination there has recently taken place such an impetus in cotton planting as to bring the entire foreign cotton production to an aggregate figure higher than that accredited to our own country, where this year's production is estimated at a little under 15,000,000 bales.

This new cotton menace comes from China. The Chinese have raised cotton for many centuries, but only for local consumption, the cotton being spun by hand close to the field where it was grown. But during the last few years a number of factories have been erected in the vicinity of Shanghai, and an additional great impulse to cotton growing has been given by the government inhibition against the opium trade, which makes it necessary that the fields previously devoted to the poppy plant should be turned to some other use; and in most instances cotton has taken the

place of the poppy. The result is that the Chinese cotton output for the present year will considerably exceed 5,000,000 bales. China has already begun to export cotton, some of it going to Japan, which hitherto has been a considerable purchaser of American cotton goods, but which now is equipped to do much of its own manufacturing.

It is obvious that our Southern States can no longer maintain their serene confidence in their own supremacy. They cannot compete with the cheap labor of India and China, and if they are to hold their own in this vast industry, which for a number of years has added to the wealth of the South a billion dollars a year, they must find some way of using more machinery and less hand labor. It is a well-known fact that there has been very little development in the methods of growing, picking and handling cotton since the time when Andrew Jackson made such an effective entrenchment of it at New Orleans—a hundred years ago. Hitherto there has been no compelling necessity for improving these methods, but with the great and rapidly growing competition from the East this necessity has now arrived and undoubtedly will prove effective in introducing many economies in American cotton production. With greater competition and the exercise of economy which it may necessitate, the price of cotton should gradually drop; and with the greatly decreased price of rubber the manufacturer of tires and other articles combining these two materials can confidently look forward to permanently lower costs.

THE LONDON RUBBER SHOW IN JUNE.

IT is the pleasant and commendable custom of many men in the American rubber trade to tie up, early in June, the cares and perplexities of manufacture and distribution for summer storage and to betake themselves across the water to get in touch for a month or two with the more ancient civilization of the Continent. It is timely, therefore, to remind all such of the Rubber Show which will open in London, in the Royal Agricultural Hall, on the 24th of June, and continue until the 9th of July.

This is the fourth International Rubber Exposition. The first was held in London in 1908. It was necessarily somewhat experimental, but it proved so successful that it was followed three years later by another exposition, held in the same city, but much larger in its scope. The third International Exposition it is not

necessary to describe in detail to American readers, as it was held in the Grand Central Palace in New York in the fall of 1912, and was attended and enjoyed by practically the entire American rubber trade. All three of these functions were under the management of Mr. Manders of London, who is also the organizing manager of the show to be held next month, and who brings to this enterprise the supremely valuable assets of large experience and wide acquaintance. The exhibition next month will enjoy great social prestige from the fact that it will be opened by H. R. H. Prince Arthur, and from the further fact that an address will be made by the Honorable Lewis Harcourt, Secretary of State for the Colonies.

There is one rubber question much more pressing now than on the occasion of any of the earlier rubber exhibitions, viz., the necessity for the discovery of new uses for rubber; and many prizes are offered to inventive geniuses who shall come forward at the exhibition with such discoveries. This is a matter of interest quite as much to American manufacturers as it is to eastern planters. Another feature most important to the American manufacturer will be the comprehensive exhibit of plantation rubbers to be seen at the show, for the plantation product is bound to enter into American manufacture more and more.

It is not likely that any American rubber man intending to go abroad this summer has omitted the London show from his itinerary, but if he has he had better mend his itinerary forthwith so that he will find himself in London at least some of the days between June 24 and July 9.

TURNING PHILANTHROPY INTO PROFITS.

PHILANTHROPY is commendable and profits are desirable; and where the two can be combined the situation is doubly satisfactory. "The National Clean-up and Paint-up Committee," with headquarters at St. Louis, composed principally of men who are interested either in the manufacture or distribution of paints and paint materials, have inaugurated a widespread clean-up and paint-up campaign in which some 2,000 towns—with more to come—are already enthusiastically interested and eager to prosecute the work; and very soon the result of the cleansing and beautifying effect of this movement will be apparent from the Atlantic to the Pacific. Anybody who can get any community to get rid of its rubbish and paint its houses and barns and fences is a benefactor. That cannot be questioned. And, of course, a painting campaign means the consumption of paint, and where several thousand communities are involved, a very large consumption of paint. So while this movement

is highly beneficial to all who live in the communities it reaches, it is particularly beneficial to those who make and deal in paint and the materials from which it is made. In other words, this is a case of philanthropy with substantial incidental profits. Every maker and wholesaler in the paint trade can well afford to take part in it. It is a very satisfying kind of co-operation.

Nor is this kind of philanthropic-profit-producing co-operation confined to the paint industry. It is adapted to many lines. For instance—Why shouldn't all the rubber footwear people get together a little later and plan a fall campaign for national dry feet—getting a few doctors to help, just to give the movement proper professional tone? The humble golosh is not only a commercial product, but it is unquestionably a conservator of health—a true life preserver. And if all the manufacturers of rubber boots and shoes were to band together for this work, they would not only have the satisfaction of knowing that they were accomplishing more for the national health than seven shiploads of assorted serums could do, but at the same time they would sell twice as many rubbers.

THE silent rubber heel and the squeakless rubber sole have achieved a distinct triumph; they have secured official recognition and endorsement by the most august legislative assemblage on earth—which of course is the United States Senate. The continuous thunder of heated debate, and particularly this conundrum of the Panama tolls repeal, seem rather to have got on the senatorial nerves, as one member—and singularly enough a western member—recently complained to the sergeant-at-arms that the pounding of the pages, as they ran up and down the aisles, was too much for his sensibilities, and that this unnecessary noise must be stopped. Thereupon the sergeant-at-arms called the pages together and issued an edict that they must all equip themselves henceforth with rubber heels and soles. This they have done. And now the Senate chamber is the abode of silence that it should be; and one more conspicuous and convincing proof has been given to the world of the superiority of the soft and silent heel and sole of rubber as contrasted with the din and clatter of heels and soles of leather.

IN accordance with its usual custom, THE INDIA RUBBER WORLD reproduces in this issue the annual statistics of imports and exports of crude and manufactured rubber of all kinds for the fiscal year ended June 30 last. By the courtesy of the Department of Commerce, these figures are presented in advance of their official publication. While the volume of unmanufactured rubber is 7 per cent. more than in the previous fiscal year, the value is 4 per cent. less. Exports of domestic rubber manufactures show an increase of about 10 per cent., from 13 to 14½ millions of dollars. The accurate classification makes it possible to show the results very clearly.

WHAT THE RUBBER CHEMISTS ARE DOING.

[The following articles have been taken from the *Chemistry of Rubber* which have appeared in some of the foreign publications.]

IN the *Revue de Chimie et la Caoutchouc* of the 15th of January, 1914, A. Dubosc contributes an article on the use of formic acid for the reclaiming of rubber. He points out the drawbacks inherent in the sulphuric acid process, such drawbacks consisting chiefly in the injurious action of the acid on the rubber and the difficulty of completely washing out the last traces of acid. While it is a fact that the mineral acids have, under certain conditions, a pronounced action on rubber, the organic acids, especially acetic and formic, have an action much less pronounced. By the action of acetic acid on cotton fabric, cellulose acetate is formed, which latter may be separated from the rubber by means of acetone. It is more expedient, however, to continue the action of the acid on the fabric till the acetate or formate of cellobiose is formed.

It is preferable to use formic acid rather than acetic acid, for the reason that the formic acid acts without the application of heat. It is necessary to use twice the weight of 90 per cent. formic acid on the weight of the scrap rubber. The formic acid before being used must be saturated with hydrochloric acid gas. In 12 hours the fabric is converted into water soluble cellobiose formate. The mass is filtered and the rubber washed and dried. By working at temperatures between 60 degs. and 70 degs. C. it is possible to bring about the conversion of the fabric in about 4 hours.

In the "India Rubber Journal," Vol. 47, No. 9, H. P. Stevens publishes an investigation on "The Influence of Various Nitrogenous and Resinous Substances on the Vulcanizing Properties of Rubber." The author determines the effect which the removal of the protein matter has on the vulcanization of rubber, the effect of the removal of the resins, and the effect of the combined removal of the protein and resins. He also carries out experiments with a view to determining the influence which added amounts of these substances have on the vulcanization of rubber.

It is found that the removal of the protein matter greatly retards the coefficient of vulcanization, and produces a product which exhibits very slight resistance to stretching. Adding Casein or Riedel's Peptone to rubber, from which the protein matter has been removed, while aiding the combination of the sulphur and rubber, does not materially aid in improving the physical tests of the compound. The addition of starch to protein-free rubber was found to be of no avail. When litharge is used in the vulcanization of a rubber, from which the protein matter has been removed, there results a product which exhibits the normal coefficient of vulcanization, and gives highly satisfactory physical tests.

The removal of the resins does not effect the co-efficient of vulcanization, and aids slightly in the resistance to stretching of the vulcanized product. Reincorporating the extracted resins, and subsequently vulcanizing, gives normal values. Instead of incorporating the extracted resins, the same weight of Pontianak resin may be used without affecting the results obtained. If, however, colophony is used, there results a decrease in the resistance to stretching.

Rubber freed from resins and protein matter, on vulcanizing behaves similarly to rubber from which only the protein matter has been removed.

In the "Colloid Zeitschrift," Vol. 14, page 35, F. Kirchhof contributes an article on the "Addition Products of Rubber." The author observed that vulcanized rubber behaves differently from unvulcanized rubber when allowed to oxidize either in the air or in oxygen. In the case of the vulcanized product, it would seem as if there were only one double bond for every $C_{10}H_{16}$ complex. Furthermore, unvulcanized rubber behaves similarly to vulcanized rubber when acted upon by certain substances in

the gaseous state, such as, for instance, bromine or sulphur chloride. After the saturation of one double bond no further addition of bromine or sulphur chloride results. It would therefore appear as if sulphur in the process of vulcanization acted on rubber in a similar manner as do bromine and sulphur chloride at ordinary temperatures.

In view of the above observations, Kirchhof carried out a series of experiments in which he determined the increase in weight in a film of rubber when exposed to oxygen, bromine and sulphur chloride for definite periods of time. In addition to determining the increase in weight when rubber was allowed to react with the above named substances in the gaseous condition, the author also determined changes in viscosity as resulting from the addition of small quantities of sulphur chloride, and also from the addition of oxygen.

As the result of these experiments the author concludes that the reactions which result in the formation of addition products proceed, in the case of rubber in the solid state, as though there were only one double bond for every $C_{10}H_{16}$ complex. This might be explained on the supposition that the two double bonds in the octadiene ring, supposed to exist in rubber, had unequal affinities, or the saturation of one of these double bonds results in the weakening of the affinity of the other. There is no experimental evidence, however, in favor of either of these views. It is more reasonable to explain this phenomenon from the standpoint of Partial Valences, the more so, since the latter are supposed to condition the colloidal state, in that they unite the individual simple complexes to form the highly complicated colloid. As the result of the formation of the addition product, the Partial Valences are converted into saturated bonds, with the simultaneous addition of the bromine or sulphur chloride.

The addition of very small quantities of bromine or sulphur chloride results, in the first place, in a marked decrease in viscosity, though an increase in the viscosity soon results, gelatinization finally taking place. The period of time necessary before gelatinization results is dependent on the original viscosity of the rubber solution, the solvent, and the concentration of the sulphur chloride. In a naphtha solution the period of time is shorter than in a benzol solution. This decrease in the viscosity is to be regarded as a depolymerization of the rubber. After such depolymerization the rubber becomes more reactive for the formation of addition products. It behaves as if it had two double bonds for every $C_{10}H_{16}$ complex. It will thus be seen that rubber in solution behaves differently from rubber in the solid state regarding the formation of addition products. In cases where the rubber is reacted upon in the solid state, equilibrium results, and this equilibrium tends to act in the direction of repolymerization.

There are many factors which contribute to the actual equilibrium obtained, such as the original degree of polymerization, the strength of the depolymerizing agent, temperature, etc. Accordingly products are formed which do not exhibit simple and stoichiometrical relationships. Reactions of this nature have often been referred to as being examples of "absorption." The author believes that these observations are applicable to the explanation of the vulcanization of rubber. It has previously been pointed out that in the vulcanization process a slight depolymerization, owing to the action of heat, takes place. Kirchhof believes that rubber thus slightly depolymerized becomes more reactive, and is thus more susceptible to the catalytic condensing action of the sulphur, which latter reaction is regarded as the real cause of the vulcanization.

The results of government encouragement are shown in the increased area of 2,595 acres now under cotton in Bisanuloke, the principal growing center of the Monthol province of Siam. This result is partially attributed to free distribution of seed and the erection of a motor ginning plant. Receipts by rail at Bangkok have increased since 1909 from 120,000 to 2,000,000 pounds.

The Rubber Crisis In Brazil—II.

By the Editor of The India Rubber World

THE MOJU RUBBER PLANTATION, PARÁ.

FEW Americans are better known on the Amazon than Commodore E. C. Benedict. Forty years ago he visited Pará, and at eighty he still takes midwinter cruises up this great river. These visits are not alone for relaxation; he almost always fathers some new and large enterprise. For example, he installed wireless telegraph stations at Pará, Santarém and Manaus. The first installation did not work

steamers of considerable draught. During his last visit to South America Commodore Benedict took the "Oneida" with its passengers and certain leading business men in Pará right up to the plantation. The Moju Plantation Co. is the



BOAT LANDING, MOJU PLANTATION.

whereat he pulled it out and put in another. This was so successful that the Brazilian Government was more than willing to purchase it. Among other enterprises, Commodore Benedict and his associates—among whom is the Hon. Wm. M. Ivins—are owners of a big tract of land near Pará, a part of which has been turned into a rubber plantation.

To go back a little: The State of Pará offered premiums for planting, which were in the form of special exemptions and cash bonuses. A great number of private planters registered at the Department of Agriculture, and it was said that in December, 1911, there were 340,000 trees planted. While the registrants were largely individuals, the planting



HOME OF THE SUPERINTENDENT, MOJU PLANTATION.

was done by companies. The largest of these was the Moju Plantation Co.

The location is some 70 miles from the city of Pará, on the Moju river. This is a broad, deep waterway, navigable for



SALE MILL, MOJU PLANTATION.

cut in two by the river, giving them several miles of waterfront. This company owns several hundred thousand acres, most of it still heavily forested, the important clearings being in the immediate vicinity of the little settlement, consisting of the superintendent's and laborers' homes, etc., etc. When the work was begun, some four years ago, it was in charge of a Pará merchant, who took hold with much enthusiasm. He did a big business as an aviator, ran a store for the laborers and had much forest cut and burned. He also put in some 500 acres of rice, 10,000 bananas, several thousand cacao trees and 40,000 *Hevea* trees. In the belief that a bet-



FIELD CLEARED FOR PLANTING, MOJU PLANTATION.

ter tree grew in the Acre district, he sent there to get the seed, instead of depending upon trees in the vicinity.

Some 150 laborers, mostly West Indian negroes, were employed on the plantation. Whether or not the government paid the company bonuses for the plantings of rice and rubber does not transpire. According to the scale of premiums that the state promised, the company should have received about \$6,000 for rice and \$10,000 for rubber planting.

For some time Andre Goeldi worked there to produce a cover crop that should enable the company to do away with the constant cleaning of the rubber. His successful work

with the bunch grass (See INDIA RUBBER WORLD, April, 1914, P. 347) has very probably solved the problem.

A saw mill was also erected upon the property. This plant includes not only engine, boilers, pumps and tanks, but a planer, sticker, band saw and a machine and blacksmith shop.

The rubber planting is on both sides of the river, the trees



HOME OF A RUBBER GATHERER, MOTU RIVER.

being set about 15 x 20 feet apart. The close cleaning followed in the East is not employed. Instead the rows of trees stand in cleared pathways with windrows of jungle between. The trees are very healthy and growing finely. They range in age from two to four years. The land is of course very level. It is a sandy loam, with an occasional outcropping of clay.

At the present time little or no work is going on. The Pará aviador has retired from active participation in the affairs of the company. The laborers, many of whom fell ill, have been laid off, and, like everything in the Amazon valley,



HEADQUARTERS, PARA (MARAJÓ) ISLANDS RUBBER ESTATES, LIMITED.

the work waits until the rubber situation is cleared up a bit. A few men remain at the plantation as caretakers, their immediate superintendent being Mr. Gordon Pickerell, an enterprising young American, son of the United States Consul at Pará.

THE PARA (MARAJÓ) ISLANDS RUBBER ESTATES, LIMITED.

A plantation that is today making a little money is the Para (Marajó) Islands Rubber Estates, Limited. It is located some 200 miles from the city of Pará, on the Anajaz river. About four years ago the company, with English capital back of it, planted some 50,000 *Hevea* trees. They also sent out men and gathered wild rubber. Their manager, being ambitious for the company, became an aviator on a considerable scale, and finally became overextended and embarrassed. The home company then sent out T. W. Hall, an expert accountant, who pronounced the concern solvent. He appointed Sidney Hall & Co., of Pará, fiscal agents, and they in time put everything into good shape. Today they are making some money from the wild rubber on their estate, and as soon as their planted trees come into bearing they expect their revenues to increase appreciably.

Incidentally it should be noted that foreign companies usually have Brazilian managers. The reason is that under a Brazilian a company pays in taxes about \$160 a year, but if the manager be a foreigner the tax is \$1,500 a year.

THE RUBBER PLANTERS' TRUST.

Some of the otherwise well informed in Pará and Manaos are of the opinion that rubber prices will go back to their former high level. They argue that in the past the price has advanced and receded periodically and that it has never remained either high or low. They are confident that the



HAULING *Batchas* OR RUBBER BOAT AROUND A CATARACT IN THE MADEIRA RIVER.

present situation is the result of manipulation. They see in planters' associations a "Rubber Planters' Trust" which is determined to put plantation rubber into every factory in the world, so they put prices down low enough to make purchases attractive, and were successful.

THE EXPORT TAX ON RUBBER.

The price of rubber in Pará is somewhat different from its price in Liverpool or New York. It is, in fact, all of 35 per cent. less. That percentage, however, must be added before it is shipped, and is made up of the usual State and Federal export taxes, to which is added about 15 per cent. for port and freight charges.

By the way, it has been generally understood that the government planned to take off its export tax, reducing it some 10 per cent. each year until it finally was wiped out. The fact is, 10 per cent. was to be taken off of the weekly *Pauta* or valuation of the rubber (not from the tax), which would be so small as to be hardly appreciable.

That the government has not reduced the export taxes on rubber does not surprise anyone. It could not be done, for the rubber tax is practically the only source of revenue. Of all the millions that have been received in years past none

have been laid aside for a sinking fund, and the treasury is always empty. To anyone who likes to think in big figures it is interesting to estimate how much rubber money has been taken in taxes by Brazil during the last 25 years. Figuring Pará rubber at \$1 a pound and cacho at 60 cents, and averaging taxes at 20 per cent., the sum would reach \$350,000,000; which is a very conservative estimate.

THE "PORT OF PARÁ" AND THE MADEIRA-MAMORE RAILWAY

The city of Pará, commanding the entrance to the great Amazon valley—an area of over 270,265 square miles—is ideally situated. Because of this, when the opening of the Amazon to the navigation of the world brought it into direct communication with Europe, as well as with the United States, its population grew from 30,000 to 200,000. Much of this increase was due in part also to the great growth of the rubber business.

This rapid development of the city made it patent that the facilities for coping with the increasing traffic of the port were inadequate. Believing that the rubber business would continue to expand, a syndicate of capitalists under the name of The Port of Para Co. took up the work of Port development.



PORT OF PARA OFFICE BUILDING ON THE BOULEVARD DA REPUBLICA, PARA.

This company's concession from the Federal Government of Brazil gives it the monopoly of the Port services, construction and operation of quays, warehouses and other works at Pará within a zone of 18 miles towards the ocean and 12 miles in the other direction for a period of 65 years, to be extended 90 years after the completion of the second section of the works.

The Port works, now nearly finished, are of the most modern character, are equipped with the best appliances for loading and unloading vessels, for warehousing and distributing merchandise, and are equal in every respect to the most up-to-date ports of Europe, such as Liverpool, Antwerp and Hamburg. Vessels of the largest draught can pass from the old deep water anchorage by a new channel to the quay wall at any state of the tide.

Up to the present time the following works have been completed: 4,133 feet of quay wall for ocean going steamers, with a depth of water alongside of 30 feet at low water of ordinary spring tides; 722 feet of quay wall for river steamers, with a depth of water alongside of 12 feet; 1,500 feet of quay wall for river steamers, with a depth of water alongside of 9 feet 9 inches; 13 warehouses, giving a floor space of 31,084 square yards; 2 double-story warehouses, 394 x 66 feet, with four 1½-ton electric elevators, as well as other electric appliances for the handling of the merchandise; 9 3-ton electric cranes and 5 5-ton electric cranes; several small steam cranes; electric light and power station; facilities for coaling and watering steamers; marine repairing shops; 2

storage oil tanks at Hyutanahan—capacity of each, 1,500 tons; 3 large crude petroleum storage tanks at Miramar, the largest in South America—capacity of each, 7,800 tons of oil; 3 oil tank lighters of 1,000 tons capacity; a large depot for materials of an inflammable nature.

On and adjacent to the Val-de-Caes property—a property secured by the Port company about three miles north of the



PORTO VELHO, MADEIRA-MAMORE RAILWAY

city of Pará—a complete ship-repairing depot, consisting of two floating docks and three slipways, with repairing shops, has been installed. The floating docks, which are operated electrically, are designed for river vessels, each with a capacity of 1,700 tons dead weight. The slipways, also operated electrically, are capable of taking vessels up to 800 tons dead weight, at any state of the tide.

The repair shops comprise several buildings, including machine shops, smiths' shops, foundry, platers' shop, pattern makers' shop, joiners' shop, office and stores. The whole is equipped with the most modern and effective machinery, and



THE LAST OF THE CITY SUBURBS, PARA.

operated by electricity transmitted over the company's own line from the company's power station at the city of Pará.

The first section of the Port Works was formally inaugurated on October 12, 1909, since which date steamers have been coming alongside the quay wall, and business is being carried on to the entire satisfaction of the Customs authorities, shipping agents and others interested.

The importance of the construction of the Madeira-Mamoré Railway was early realized by the Port company, which purchased about one-half interest in that undertaking. The Madeira-Mamoré Railway from Porto Velho on the Madeira river around the series of cataracts which seriously obstruct navigation to Guajará Mirim on the Mamoré river, 340 kilometres (211 miles) in length, is already open for traffic. This railway, by bringing the river navigation of the Amazon and its tributaries into connection with the navigable rivers of Bolivia, is opening an enormous extent of rich and fertile territory, as well as the mineral wealth of the Eastern slope of the Andes.

In addition to these great enterprises, the Companhia Navegação de Amazonas was formed, and a fleet of twelve 1,000-ton twin-screw boats built, which connect the city of Pará with the rivers Madeira, Purus and Juruá, where navigation is possible at all times of the year.

From these points a fleet of 14 light-draught stern-wheelers carry merchandise and passengers to the smaller tributaries of the upper reaches of the Amazon. The company had in sight a large amount of traffic for the port and planned to materially lower rates of transportation, thereby largely developing the trade with the upper regions of the Amazon valley.

That such enterprises, installed in the face of incredible difficulty and at the cost of millions of dollars and the loss of many lives, should have even a temporary setback is a



CONSTRUCTION TRAIN, MADEIRA-MAMORÉ RAILWAY

calamity. But the works, practically completed and ready to serve Northern Brazil and the world, are only partially in use. The great warehouses are nearly empty, many steamers loading in mid-stream to save port charges. The fine new steamers are anchored off Val-de-Caes, and very little is being done anywhere. The ship yard is doing some work on the company's boats, and the dry dock holds a Peruvian vessel, but everywhere is economy and contraction when there should be bustle and expansion. So, too, on the Madeira-Mamoré Railway. One train a week has been running, so it was recently said, and the working force has been cut down as far as consistent with safety. Indeed, it was said that native labor had become so clamorous for employment at any price that the *batelaos* had been repaired and filled with rubber to run the cataracts as in the olden time, tho the railroad was built for the express purpose of avoiding this slow and dangerous system of transportation.

THE RECORD OF THE "PROTECTION OF RUBBER."

The amazing story of the Defesa da Borracha (Protection of Rubber) is the most unfortunate of the happenings of the Amazonian rubber crisis. Conceding that it was an honest attempt to conserve the rubber industry of Brazil, its cost in dollars to a people now in dire financial distress and its failure to accomplish what it promised are appalling.

It began with an appropriation of 8,000 contos (\$2,400,000) and the establishment of a commission, with the Minister of Agriculture as its head, to spend the money. The center of active work was at Rio de Janeiro. There the central bureau was established, with the following pay roll:

	Monthly Salaries.
Superintendent	\$1,600.00
Chief engineer, Rio Branco	900.00
Physician	800.00
Constructing engineer	500.00
Chief engineer of Partial Commission	400.00
Chief engineer of District of Inspection	400.00
Engineer of First Class, Rio Branco Section	400.00
Agricultural engineer	300.00
Engineer of the Second Class	300.00
Secretary to the superintendent	300.00
Paymaster, Rio Branco Section	300.00
Draughtsman, bookkeeper, clerk, typewriter, messenger, servant and other employees	1,500.00

Total monthly salaries..... \$7,700.00

Total yearly salaries..... \$92,400.00

Certain of the officials, because of the high cost of living in their localities, were allowed from 50 to 80 per cent. increase over their salaries, at the discretion of the superintendent.

Under the central bureau were numerous branches and experiment stations, each with its list of salaried men. For example, that at Pará had the following, the salaries given being annual:

Director	\$4,000.00
Chief of Technical Section	3,000.00
Assistant, Technical Section	2,000.00
Chief of Culture	1,400.00
Horticulturist Gardener	1,000.00
Head Mechanic	1,000.00
Almoxarife (storekeeper)	2,000.00
Librarian	1,600.00
Clerk	1,200.00
Porter	800.00

Total..... \$18,600.00

The other experiment stations were:

Amazonas	18,600.00
Matto Grosso	18,600.00
Bahia	18,600.00
Piahy	18,600.00
Minas Geraes	18,600.00

\$111,600.00

The total annual salaries for the six stations, it will be seen from the table above, amounted to \$111,600.

Then followed a series of contracts, namely:

For Dr. Carlos de Cerqueira Pinto's secret processes and patents for coagulating rubber latex, \$180,000 in 1913 and \$180,000 in 1914. In addition a royalty of .0014 per pound on rubber coagulated by his process until he should receive \$400,000. (This contract with Dr. Pinto was described in considerable detail in THE INDIA RUBBER WORLD for November, 1913. A great many of the rubber men of this country had an opportunity to familiarize themselves with its results at the time of the New York Rubber Show, as Dr. Pinto had an exhibit at that exhibition and displayed many samples of rubber coagulated by this process—which avoids all forms of fumigation and employs a certain ingredient, "lactina," prepared by a formula which Dr. Pinto discovered and patented.)

With Dr. Oswaldo G. Cruz, for plan to make the valley of the Amazon sanitary, \$210,000 and traveling expenses.

With Engineer M. Mallard, plans for betterment of navigation of Amazon, \$60,000.

With the Port of Pará Co., two expeditions up the Amazon, \$650,000.

With J. P. Wileman, publishing Bulletin, \$15,000.

For washing plant at Manaus, \$120,000.

For washing plant at Minas Geraes, \$30,000.

With Goodyear Tire & Rubber Co. of South America, \$150,000.

With Labroy for Pará experiment station, \$14,400.

Thus, in salaries and contracts there was a grand total of \$1,768,400.

Then there were the rubber exhibitions at Rio Janeiro and at Pará, together with conferences, committees, etc., etc.

Beyond this there were the premiums calling for additions to the foregoing. They were:

Premiums amounting to \$450,000 for nine plants for washing rubber at Pará, Manaus, Bahia and other points.

Premiums amounting to \$450,000 for five factories for the manufacture of rubber goods.

For establishing a fishery industry, \$3,000 a year for five years.

For creating pasture lands, \$9,000 for each 2,500 acres.

For rice, corn or beans planted, \$30,000 for each 2,500 acres.

For beef products, tinned, \$30,000 for each 500 tons.

The rubber premiums for new planting were:

\$800 for each 30 acres of *Hevea*.

\$480 for each 30 acres of *Manihot*.

\$480 for each 30 acres of *Castilloa Ulei*.

\$300 for each 30 acres of *Hancornia*.

For replanting wild rubber the premiums for each 62.5 acres were

\$600 for *Hevea*.

\$300 for *Manihot*.

\$300 for *Castilloa Ulei*.

\$250 for *Hancornia*.

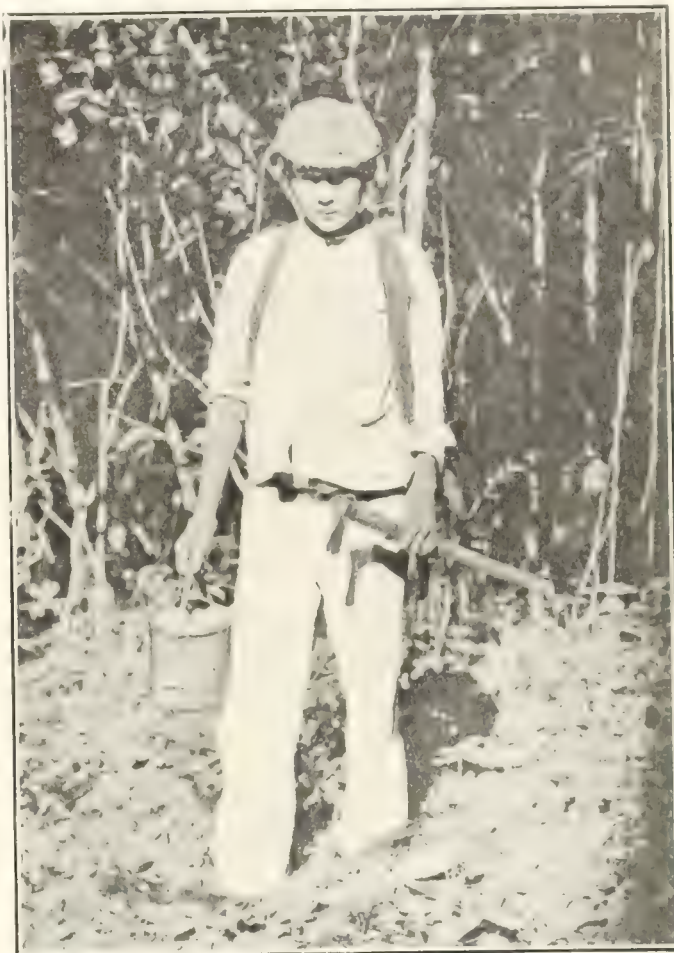
There was also monetary provision for hospitals in the interior, equipped with modern laboratories and instruments, and for hotels for emigrants at Pará, Manaus and other points, etc., etc.

It will thus be seen that \$2,500,000 would only go a short way in carrying out these far-reaching plans. The Minister of Agriculture saw this, and in his budget called for 5,000 contos (\$1,500,000) for 1913 and 10,000 contos (\$3,000,000) for 1914. This minister, Dr. Pedro de Toledo, has gone out of office, and whether his successor, Dr. E. de Queiroz, will ask for more or less is a question. The gossip on the Amazon, however, is that no more money will be forthcoming.

THE SERNING LIKE THE LAST HOPE

The failure of the great rubber factories and the continued low prices for rubber are bringing to the front the *Seringueiros*, particularly those that live on the lower reaches of the Amazon. When supplies are cut off at the fountain head in Pará they will not starve. On the contrary, they can get an excellent living from the land. They are planting corn, cassava and beans, catching fish, and are just as content as when they purchased their supplies at exorbitant prices. They will continue to gather rubber, the whole family assisting, and if they receive only ten cents a pound will consider it all profit. When this thrifty, mosquito-proof individual awakens to the fact that it is profitable to plant a

few *Hevea* trees, and to turn in only clean rubber, that is what he will do. Until that time he will gather and market



ONE WHO WILL ALWAYS GATHER RUBBER.

a certain amount each year, and the price will not trouble him in the least.

PARA AND MANAOS RUBBER STATISTICS FOR 1913.

According to the figures of Zarges, Berringer & Co., Para, the 1913 exports from Para and Manaus represented a total of about 40,000 tons, while the Para stock on December 31 was about 1,000 tons, thus bringing the year's production up to about 41,000 tons. Of the 40,000 tons exported, Europe took about 22,000 tons, and the United States about 18,000 tons. Comparison with the figures of recent years shows the exports to have been approximately: 1903, 31,000 tons; 1904, 31,000 tons; 1905, 34,000 tons; 1906, 35,000 tons; 1907, 36,000 tons; 1908, 38,000 tons; 1909, 40,000 tons; 1910, 38,000 tons; 1911, 36,000 tons; 1912, 43,000 tons; 1913, 40,000 tons.

Exports of rubber from the State of Sao Paulo for 1912 and 1913 were valued at \$54,479 and \$29,627, respectively.

BRITISH INDIAN COTTON PLANTING.

According to an Indian official report, the cotton crop of 1913-14 was in general successful, with the exception of some portions of the presidency of Bombay and of the Central and United Provinces, which have more or less suffered from drought.

The total area under cotton is stated to be 23,900,000 acres, as compared with 20,900,000 in the previous season, the increase being about 14 per cent. By the latest reports the total production showed a gain of about 15 per cent., from 4,300,000 bales in 1912 to 4,928,000 in 1913.

RUBBER GATHERING IN THE PERUVIAN MONTANA.

AMONG the results obtained by the various expeditions which have explored the Ucayali, Azupizu, Uruçamba, Manu, Marañon and Juambari rivers, has been the finding of large tracts which had not yet been trodden by rubber gatherers. Reliable explorers like von Hassel, Stieglich and others maintain that there are in those regions at least 200 different latex-bearing varieties of trees.

Only natives can be taken into consideration as workers, the tropical climate proving destructive to the health and activity of Europeans. The rubber gatherers are mostly half-breeds, for the Indians of these zones only occupy themselves occasionally with rubber. As penetrating the primeval forest is no slight task, the rubber tappers usually choose the sections which are easily reached by boat. This is why the extensive rubber locations are mostly found in the vicinity of rivers. What lies further towards the interior is to a great extent disregarded.

The system under which rubber is gathered in Bolivia is similar to that in force along the Amazon. The man who gets a concession has to equip the gatherers in advance, and this involves often a very considerable outlay. While the gatherers are at their work they are entirely removed from any control. When they return at the end of the season they are credited with the rubber which they bring back, against which are charged all the advances made at the beginning of the season. Gatherers are sometimes engaged at a fixed rate of payment, but this is only possible where the conditions under which they are to work are fairly well known.

In the months of July, August and September the tappers start to look for new locations, the rubber trees being at that time most easily distinguishable by their color. The trees found are marked by the forest-knife, such marks being generally respected by other gatherers. Each tapper marks an *estrada* of 80 to 150 trees. He then hews a path from one tree to another through the thick underwood, to make a way for the future operations; then erecting near the river his primitive hut, he waits till October when the tapping season commences, to last till the beginning of December. The rainy weather stops tapping during January, February and March, while work can be resumed in April, May and June. These periods, however, vary according to the different zones. The Peruvian Montana is exploited most wastefully and without system of any sort. With efficient administration and proper operation, the yield of that region might be increased ten fold.

In the northern part of Peru, matters are different. There

large English companies have tried to work the rubber forests in a rational way, but in the absence of experienced laborers they were thrown back on the entirely uncivilized Indians. The latter can only be trained to regular work with considerable difficulty, and had to be treated practically as slaves. This system was what gave rise to the Putumayo scandal of 1912.

Rubber lands can be acquired in four ways: 1, by purchase; 2, by condemnation; 3, by grant; 4, by concession. In each case special regulations are applicable.

COLONEL CHAVES AND THE ACRE RUBBER TAX.

A GRAPHIC presentment of the difference between the exporting of rubber from Brazil and Bolivia is shown in the following table. This was prepared by Colonel Avelino de M. Chaves, who is the owner of a large *seringal* on the Purus river in the Federal district of Acre. Colonel Chaves



COLONEL AVELINO DE M. CHAVES.

found that the municipality of Senna Madureira, department of Acre, had put an extra 1 per cent. tax on Acre rubber, in addition to the 20 per cent. regular tax; whereupon he presented these figures, stirred up other shippers as well as the commercial associations at Pará and Manaus, and the 1 per cent. tax was repealed.

ACCOUNT SALES OF RUBBER FROM ACRE AND BOLIVIA.

Sold in Manaus.

2,200 lbs. from Acre.			
Fine.....	1,622 lbs. @ .74	\$1,200.00	
Entre Fine	330 lbs. @ .64	211.00	
Sernamby	154 lbs. @ .52	81.00	
Loss.....	94 lbs.		
	2,200 lbs.	\$1,492.00	
Charges 22 per cent.....		328.00	
			\$1,820.00
Expenses.			
Taxes 20 per cent.....	\$298.35		
Freight	129.60		
Expenses in Manaus	64.80		
Stamps, etc.	37.25	\$530.00	
Net receipts			\$1,290.00

2,200 lbs. from Bolivia.			
Fine.....	1,622 lbs. @ .74	\$1,200.00	
Entre Fine	330 lbs. @ .64	211.00	
Sernamby	154 lbs. @ .52	81.00	
Loss.....	94 lbs.		
	2,200 lbs.	\$1,492.00	
Charges 22 per cent.....		328.00	
			\$1,820.00
Expenses.			
Taxes 8 per cent.....	\$119.35		
Freight	129.60		
Expenses in Manaus	64.80		
Stamps, etc.	37.25	\$351.00	
Net receipts			\$1,469.00

Dr. Huber's Last Four Articles on *Hevea*.

WHEN, in January last (page 170), THE INDIA RUBBER WORLD published a review of the recently issued "Boletim," Vol. VII., of The Goeldi Museum, Pará, the work accomplished by that institution was regarded with the prospect of its being for a long time to come under the skilled direction which had brought it to its present condition. By the death of Dr. Jacques Huber, on February 18, The "Boletim" (or "Bulletin") derives a fresh interest from the fact that it contains a group of four articles by Dr. Huber on his favorite subject of *Hevea*, which thus acquire retrospective value. A brief summary of these articles is here reproduced as a contribution to rubber literature, and as a memorial of the deceased scientist.

In his opening words, the author explains that although seemingly disconnected, these four articles are all inspired by the desire to elucidate the intricacies which attend the affinities between the varieties of this genus, as well as its geographical distribution. It is hoped in this way to attain a more reliable basis for the commercial nomenclature of the product, and the methodical selection of the types most appropriate for systematic cultivation.

SCOPE OF THE FOUR ARTICLES.

The articles are divided as follows:

- I. Systematic and Geographical Distribution of the genus *Hevea*.
- II. Some species of *Hevea* from the river Iça-Putumayo.
- III. Distribution of *Hevea* in State of Pará.
- IV. Variable characteristics of genus *Hevea* and possibilities of a methodical selection.

SYSTEMATIC AND GEOGRAPHICAL DISTRIBUTION OF HEVEA.

The botanical nomenclature of the separate varieties of *Hevea* had formed the subject of controversy between Dr. Huber and Professor Pax, of Breslau, the first-named scientist having made a classification of the botanical section *Bisophonia* into three series, with fourteen sub-divisions, while the latter defined seven series with eighteen varieties. The individual classifications being in many cases alike, the difference was in their allocation into sub-divisions, *Hevea Brasiliensis* constituting a prominent feature in each case, and being referred to as differing only slightly from *Randiana*.

Dr. Huber's proposed division is as follows: *Luteae* Series—*Hevea lutea*, *apiculata*, *caneata*, *Benthamiana*, *Duckei*, *paludosa* (*rigidifolia*). *Intermediae* Series—*Hevea minor*, *microphylla*, *Randiana*, *Brasiliensis*. *Obtusiflorae* Series—*Hevea Spruceana*, *similis*, *pauciflora*, *confusa*.

Besides these fourteen sub-divisions, Dr. Huber introduces three as being of uncertain allocation: *nitida*, *viridis* and *Kunthiana*, entering into a detailed discussion of the various differences pointed out by Professor Pax. He further expresses his concurrence with the view of the last-named scientist, that although the samples examined of *Hevea* fruits and seeds show various generic differences, only a few species are known. If a large parcel of seeds is secured from any point in the *Hevea* zone, some clearly-defined types may be recognized which might be regarded as minor varieties.

Proceeding to the discussion of the geographical distribution of the varieties of *Hevea*, Dr. Huber refers to the division made by Ule into two territories bounded by the equator: a northern one, traversed by "black rivers," and a larger southern one, whose rivers are of white water. Both districts have their own varieties of *Hevea*, though in locations near the boundary species of a transition character are to be found.

According to Professor Pax, the northern half would contain

eleven varieties and the southern seven, while, according to Dr. Huber, the relative distribution would be eight and eleven. Dr. Huber remarks that as a fact the Amazon territory cannot be divided by the equator, the Amazon valley or any other imaginary line, into two natural regions, and that we would obtain a wrong idea of the distribution of *Hevea* if we accepted such a division. According to the present stage of exploration, the varieties apparently belonging to the Rio Negro territory are: *Hevea lutea*, *apiculata*, *Benthamiana*, *rigidifolia*, *minor* and *microphylla*. To the territory west of the Rio Negro belong: *Hevea Duckei* and *paludosa*; to the eastern part of the continent up to the coast of Guiana: *Hevea Guayanensis*; while to the most northerly part of the area belong *Hevea membranacea* and *pauciflora*. To the central Amazonian lowlands belong—with a particular extension to the south: *Hevea Brasiliensis*; with northerly and southerly radiations: *Hevea Spruceana*; with a limited area along or near the course of the Amazon: *Hevea Similis*, *discolor*, *nitida* and *viridis*. To the continent south of Amazonas belong: *Hevea cuneata*, *nigra* and *collina*, while a variety resembling *Guayanensis* is found on the continent to the east of Belem (Pará).

II. SOME SPECIES OF THE HEVEA FROM THE RIVER IÇA-PUTUMAYO.

In dealing with this subject, Dr. Huber explains that the river Iça (called by the Peruvians the Putumayo), is one of the northern affluents of the Solimoes. As will be recalled, this river has many *seringaes* along its course, the rubber coming from there being known as "Putumayo" rubber. It is inferior in quality to that received from the southern affluents of the above-named river.

Reporting on three samples of Putumayo rubber, which he received early in 1911 from W. Fox, former superintendent of the Penang Botanical Garden, who had lately visited Peru, Dr. Huber gives a complete botanical description of:

Hevea Foxii, said to grow to the height of 70 feet, found in the woods near Ultimo Retiro and called by the natives "Ituri"; *Hevea glabrescens*, found in Eastern Peru, on the river Putumayo, near Liberia and Sombra; *Hevea viridis*, already described by him on previous occasions, found to the west of the Putumayo river.

Dr. Huber considers the first two of the above (which have been designated as "new species—Huber") as being intimately related to the group of *Hevea lutea*. He quotes the remarks of Mr. Fox to the effect that 75 per cent. of the rubber exported from the Putumayo region is produced from *Hevea Foxii*, this variety of tree being the only one as a rule incised, all the other rubber trees being felled in order to extract their latex.

The third sample received by Dr. Huber from Mr. Fox, *Hevea viridis*, had been already described by the former in 1902, in the "Bulletin de la Société Botanique de France," Volume XLIX., page 48, and in the "Boletim" of the Pará Museum, Volume III., page 16 and 17. Dr. Huber expresses the opinion that the third plant collected by Mr. Fox corresponds exactly with the *Hevea viridis*, described as above. It is found on both sides of the Amazon.

III. DISTRIBUTION OF HEVEA IN THE STATE OF PARÁ.

Applying the general principles already propounded, to the State of Pará, Dr. Huber distinguishes four typical series of *Hevea*:

1. *Seringueira verdadeira* (*Hevea Brasiliensis*), of the series *Intermediae*.
2. *Seringueira torrada* (*Hevea Benthamiana*), of the series *Luteae*.
3. *Seringueiras vermelhas* (*Hevea Guayanensis* and *collina* of section *Euhevea*).
4. *Seringueira barriguda* (*Hevea Spruceana*) of the series *Obtusiflorae*.

REPORT OF THE BRAZILIAN MIXED COMMISSION.

WHILE the question has formed the subject of Brazilian legislation, a Mixed Commission of Federal Senators and Deputies has likewise been investigating the causes of the present Amazon crisis. The report of this commission, as presented by its spokesman, Dr. Eloy de Souza, and reproduced by the "Revista" of the Commercial Association of Amazonas, refers to various points of importance.

In the first place, Dr. de Souza urges that the present trouble is one of an organic character, affecting national production, which has cost numerous lives and much money during the thirty-five years in which efforts have been made to counteract it, the public authorities having been tardy in the solution of so important a problem. Administration incapacity has, moreover, been blamed for permitting the competition of a similar product of foreign origin on such conditions that it will be difficult to establish a just equilibrium between the cost of producing Brazilian rubber and that at which competing qualities are offered in the markets of consumption.

Special reference is made to the two reports of Dr. Oswaldo Cruz, principal medical authority on existing sanitary conditions: one with regard to the construction of the Madeira-Mamoré railway, and the other of a general character. In the former it is stated that the climate seems to have reduced to 50 per cent. the normal working capacity of laborers from tropical regions. The examples of the governments of Ceylon and Malaya are quoted in the latter as deserving of imitation by the Brazilian authorities in the enactment of sanitary legislation.

The respective production per acre in Brazil and the East is compared, attention being called to the saving of time in the latter case by reason of the fact that the trees are close together instead of being widely scattered. It is estimated that the laborer can in a given time tap twice as many trees on the one continent as on the other.

Another subject treated in detail is the example afforded by the United States in the improvement of river navigation by the removal of snags. This question has considerable interest for Amazonia, as the river system of the former greatly resembles that of the latter. At the Philadelphia International Congress of Navigation, in 1912, this similarity of conditions was commented upon by Dr. Manoel Bandeira, the delegate from Brazil. The proposed new railways are likewise dis-

WORLD RUBBER STATISTICS FROM AMSTERDAM

Amsterdam, the world's rubber production of recent years has been:

	Percentage	Amount	Percentage	Amount
1902	100	20,000	100,000	20,000
1903	100	20,000	100,000	20,000
1904	100	20,000	100,000	20,000
1905	100	20,000	100,000	20,000
1906	100	20,000	100,000	20,000
1907	100	20,000	100,000	20,000
1908	100	20,000	100,000	20,000
1909	100	20,000	100,000	20,000
1910	100	20,000	100,000	20,000
1911	100	20,000	100,000	20,000
1912	100	20,000	100,000	20,000
1913	100	20,000	100,000	20,000
1914	100	20,000	100,000	20,000
1915	100	20,000	100,000	20,000
1916	100	20,000	100,000	20,000
1917	100	20,000	100,000	20,000
1918	100	20,000	100,000	20,000
1919	100	20,000	100,000	20,000
1920	100	20,000	100,000	20,000
1921	100	20,000	100,000	20,000
1922	100	20,000	100,000	20,000
1923	100	20,000	100,000	20,000
1924	100	20,000	100,000	20,000
1925	100	20,000	100,000	20,000
1926	100	20,000	100,000	20,000
1927	100	20,000	100,000	20,000
1928	100	20,000	100,000	20,000
1929	100	20,000	100,000	20,000
1930	100	20,000	100,000	20,000
1931	100	20,000	100,000	20,000
1932	100	20,000	100,000	20,000
1933	100	20,000	100,000	20,000
1934	100	20,000	100,000	20,000
1935	100	20,000	100,000	20,000
1936	100	20,000	100,000	20,000
1937	100	20,000	100,000	20,000
1938	100	20,000	100,000	20,000
1939	100	20,000	100,000	20,000
1940	100	20,000	100,000	20,000
1941	100	20,000	100,000	20,000
1942	100	20,000	100,000	20,000
1943	100	20,000	100,000	20,000
1944	100	20,000	100,000	20,000
1945	100	20,000	100,000	20,000
1946	100	20,000	100,000	20,000
1947	100	20,000	100,000	20,000
1948	100	20,000	100,000	20,000
1949	100	20,000	100,000	20,000
1950	100	20,000	100,000	20,000
1951	100	20,000	100,000	20,000
1952	100	20,000	100,000	20,000
1953	100	20,000	100,000	20,000
1954	100	20,000	100,000	20,000
1955	100	20,000	100,000	20,000
1956	100	20,000	100,000	20,000
1957	100	20,000	100,000	20,000
1958	100	20,000	100,000	20,000
1959	100	20,000	100,000	20,000
1960	100	20,000	100,000	20,000
1961	100	20,000	100,000	20,000
1962	100	20,000	100,000	20,000
1963	100	20,000	100,000	20,000
1964	100	20,000	100,000	20,000
1965	100	20,000	100,000	20,000
1966	100	20,000	100,000	20,000
1967	100	20,000	100,000	20,000
1968	100	20,000	100,000	20,000
1969	100	20,000	100,000	20,000
1970	100	20,000	100,000	20,000
1971	100	20,000	100,000	20,000
1972	100	20,000	100,000	20,000
1973	100	20,000	100,000	20,000
1974	100	20,000	100,000	20,000
1975	100	20,000	100,000	20,000
1976	100	20,000	100,000	20,000
1977	100	20,000	100,000	20,000
1978	100	20,000	100,000	20,000
1979	100	20,000	100,000	20,000
1980	100	20,000	100,000	20,000
1981	100	20,000	100,000	20,000
1982	100	20,000	100,000	20,000
1983	100	20,000	100,000	20,000
1984	100	20,000	100,000	20,000
1985	100	20,000	100,000	20,000
1986	100	20,000	100,000	20,000
1987	100	20,000	100,000	20,000
1988	100	20,000	100,000	20,000
1989	100	20,000	100,000	20,000
1990	100	20,000	100,000	20,000
1991	100	20,000	100,000	20,000
1992	100	20,000	100,000	20,000
1993	100	20,000	100,000	20,000
1994	100	20,000	100,000	20,000
1995	100	20,000	100,000	20,000
1996	100	20,000	100,000	20,000
1997	100	20,000	100,000	20,000
1998	100	20,000	100,000	20,000
1999	100	20,000	100,000	20,000
2000	100	20,000	100,000	20,000
2001	100	20,000	100,000	20,000
2002	100	20,000	100,000	20,000
2003	100	20,000	100,000	20,000
2004	100	20,000	100,000	20,000
2005	100	20,000	100,000	20,000
2006	100	20,000	100,000	20,000
2007	100	20,000	100,000	20,000
2008	100	20,000	100,000	20,000
2009	100	20,000	100,000	20,000
2010	100	20,000	100,000	20,000
2011	100	20,000	100,000	20,000
2012	100	20,000	100,000	20,000
2013	100	20,000	100,000	20,000
2014	100	20,000	100,000	20,000
2015	100	20,000	100,000	20,000
2016	100	20,000	100,000	20,000
2017	100	20,000	100,000	20,000
2018	100	20,000	100,000	20,000
2019	100	20,000	100,000	20,000
2020	100	20,000	100,000	20,000
2021	100	20,000	100,000	20,000
2022	100	20,000	100,000	20,000
2023	100	20,000	100,000	20,000
2024	100	20,000	100,000	20,000
2025	100	20,000	100,000	20,000
2026	100	20,000	100,000	20,000
2027	100	20,000	100,000	20,000
2028	100	20,000	100,000	20,000
2029	100	20,000	100,000	20,000
2030	100	20,000	100,000	20,000
2031	100	20,000	100,000	20,000
2032	100	20,000	100,000	20,000
2033	100	20,000	100,000	20,000
2034	100	20,000	100,000	20,000
2035	100	20,000	100,000	20,000
2036	100	20,000	100,000	20,000
2037	100	20,000	100,000	20,000
2038	100	20,000	100,000	20,000
2039	100	20,000	100,000	20,000
2040	100	20,000	100,000	20,000
2041	100	20,000	100,000	20,000
2042	100	20,000	100,000	20,000
2043	100	20,000	100,000	20,000
2044	100	20,000	100,000	20,000
2045	100	20,000	100,000	20,000
2046	100	20,000	100,000	20,000
2047	100	20,000	100,000	20,000
2048	100	20,000	100,000	20,000
2049	100	20,000	100,000	20,000
2050	100	20,000	100,000	20,000
2051	100	20,000	100,000	20,000
2052	100	20,000	100,000	20,000
2053	100	20,000	100,000	20,000
2054	100	20,000	100,000	20,000
2055	100	20,000	100,000	20,000
2056	100	20,000	100,000	20,000
2057	100	20,000	100,000	20,000
2058	100	20,000	100,000	20,000
2059	100	20,000	100,000	20,000
2060	100	20,000	100,000	20,000
2061	100	20,000	100,000	20,000
2062	100	20,000	100,000	20,000
2063	100	20,000	100,000	20,000
2064	100	20,000	100,000	20,000
2065	100	20,000	100,000	20,000
2066	100	20,000	100,000	20,000
2067	100	20,000	100,000	20,000
2068	100	20,000	100,000	20,000
2069	100	20,000	100,000	20,000
2070	100	20,000	100,000	20,000
2071	100	20,000	100,000	20,000
2072	100	20,000	100,000	20,000
2073	100	20,000	100,000	20,000
2074	100	20,000	100,000	20,000
2075	100	20,000	100,000	20,000
2076	100	20,000	100,000	20,000
2077	100	20,000	100,000	20,000
2078	100	20,000	100,000	20,000
2079	100	20,000	100,000	20,000
2080	100	20,000	100,000	20,000
2081	100	20,000	100,000	20,000
2082	100	20,000	100,000	20,000
2083	100	20,000	100,000	20,000
2084	100	20,000	100,000	20,000
2085	100	20,000	100,000	20,000
2086	100	20,000	100,000	20,000
2087	100	20,000	100,000	20,000
2088	100	20,000	100,000	20,000
2089	100	20,000	100,000	20,000
2090	100	20,000	100,000	20,000
2091	100	20,000	100,000	20,000
2092	100	20,000	100,000	20,000
2093	100	20,000	100,000	20,000
2094	100	20,000	100,000	20,000
2095	100	20,000	100,000	20,000
2096	100	20,000	100,000	20,000
2097	100	20,000	100,000	20,000
2098	100	20,000	100,000	20,000
2099	100	20,000	100,000	20,000
2100	100	20,000	100,000	20,000

Official India Rubber Statistics for the United States.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES

Belgium	5,917,440	\$5,412,395
United Kingdom—England	34,164,908	33,586,808
Total	52,120,378	\$48,551,235
British Honduras	15,592	\$11,818
Canada	192,341	193,262
Costa Rica	99,781	62,881
Honduras	90,069	59,867
Nicaragua	543,250	373,732
Panama	95,097	60,986
Salvador	12,733	7,433
Mexico	2,033,791	1,329,021
British West Indies	50	47
Cuba	741	416
Total	3,216,595	\$2,190,653
Brazil	43,518,861	\$25,905,641
Colombia	635,530	434,662
Ecuador	890,217	568,187
British Guiana	15	10
Peru	352,347	303,292

Asia:

Dutch India	80,840	65,480
Straits Settlements	5,638,854	5,162,872
Other British East Indies	6,445,502	6,559,737
Total	12,255,578	\$11,888,613

Oceania:

Philippine Islands	637	\$305
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Africa:

British South Africa		\$3,246
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Total, 1912-13	113,384,359	\$90,170,316
Total, 1911-12	110,210,173	93,013,255
Total, 1910-11	76,244,603	76,244,603
Total, 1909-10	101,078,823	61,709,723
Total, 1908-09	61,709,723	36,613,185
Total, 1907-08	58,919,981	

IMPORTS OF MANUFACTURES OF INDIA RUBBER BY COUNTRIES

[— indicates increase; — indicates decrease, compared with the preceding year.]

Austria-Hungary	\$36,565—
Belgium	80,314—
France	202,214—
Germany	531,971—
Italy	2,951—
Netherlands	2,599—
Russia in Europe	35,270—
Switzerland	1,423—

North America:

South America:

Brazil	48—
Total	\$55
Asia:	
British India	\$3—
China	52—
Japan	1,851—
Total	\$1,911

Total	\$3
Total, 1912-13	\$1,217,236
Total, 1911-12	874,736
Total, 1910-11	875,125
Total, 1909-10	1,154,347
Total, 1908-09	1,391,770
Total, 1907-08	1,956,590
Total, 1906-07	2,362,783
Total, 1905-06	1,992,413

RE-EXPORTS OF IMPORTED INDIA RUBBER

Portugal	11,526	6,600
Scotland	2,695	2,237
Canada	4,488,198	3,892,130
Total, 1912-13	5,272,387	\$4,476,370
Total, 1911-12	5,610,951	4,890,905
Total, 1910-11	5,267,388	3,439,282
Total, 1909-10	6,492,047	7,629,380
Total, 1908-09	3,791,971	2,964,496
Total, 1907-08	4,110,667	2,994,208

Total, 1912-13	5,272,387	\$4,476,370
Total, 1911-12	5,610,951	4,890,905
Total, 1910-11	5,267,388	3,439,282
Total, 1909-10	6,492,047	7,629,380
Total, 1908-09	3,791,971	2,964,496
Total, 1907-08	4,110,667	2,994,208

RE-EXPORTS OF MANUFACTURES OF INDIA RUBBER

Russia in Europe	1,026
Total	1,150
Total, 1912-13	1,812
Total, 1911-12	1,67
Total, 1910-11	15
Total, 1909-10	762

Total, 1912-13	\$7,973
Total, 1911-12	6,641
Total, 1910-11	29,356
Total, 1909-10	13,568
Total, 1908-09	36,401
Total, 1907-08	176,129
Total, 1906-07	32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES

Germany	138,598	93,703
Netherlands	1,080	190

North America

		\$463
		\$463
Asia		
		\$42,674
		\$42,674
Total, 1912-13.....	480,853	\$167,313
Total, 1910-11.....	1,648,	
Total, 1906-07.....	546,890	
Total, 1905-06.....	500,779	
Total, 1904-05.....	665,217	

IMPORTS OF MANUFACTURES OF GUTTA PERCHA BY COUNTRIES.

Belgium	26,347
...	49,736
...	\$77,296

North America:

Total, 1907-08	93,545
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RE-EXPORTS OF GUTTA PERCHA

United Kingdom—		
England	22,067	\$2,200
Scotland	240	
	15	18
Total, 1912-13.	22,352	\$2,665
Total, 1911-12.	1,011	445
Total, 1910-11.	62,391	19,235
Total, 1909-10.		
Total, 1907-08.		
Total, 1906-07.		

RE-EXPORTS OF MANUFACTURES OF GUTTA PERCHA.

Total, 1912-13	\$27,906
Total, 1911-12	65
Total, 1910-11	8,687
Total, 1909-10	13,955
Total, 1908-09	31,308
Total, 1907-08	944

GUTTA JELUTONG.

IMPORTS OF GUTTA JELUTONG

Germany	37,082	\$1,642
Total	1,571,068	\$7,962

RE-EXPORTS OF GUAYULE GUM.

			POUNDS.	VALUE.		
	\$15,698				French Africa	39,331 3,498
	2,058,658					
Dutch East Indies.....	423,785	20,401	Germany	34,777 \$24,321		
			United Kingdom—England	8,991 6,372		
	\$2,094,757		Canada	40,001 23,976	Total	39,331 \$3,498
Africa:			Total, 1912-13.....	83,769 \$54,669	Total, 1912-13.....	43,385,456 \$3,709,238
			Total, 1911-12.....	197,948 98,517	Total, 1911-12.....	26,293,192 2,095,605
			Total, 1910-11.....	340,405 175,995	Total, 1910-11.....	26,948,000 2,334,870
			(Not reported until 1910-11.)		Total, 1909-10.....	37,364,671 2,998,697

Total, 1912-13.....	45,345,338	\$2,174,441
Total, 1911-12.....	48,795,268	2,255,050
Total, 1910-11.....	51,420,872	2,872,633
Total, 1909-10.....	52,392,444	2,419,223
Total, 1908-09.....	24,826,296	852,372
Total, 1907-08.....	22,803,303	1,039,776
Total, 1906-07.....	28,437,660	1,085,098
Total, 1905-06.....	21,390,116	733,074
Total, 1904-05.....	18,191,111	641,319

RE-EXPORTS OF GUTTA JELUTONG (PONTIANAK)

	POUNDS.	VALUE.
Germany	3,000	\$163
Total, 1912-13.....	3,000	\$163
Total, 1911-12.....	118,486	6,079
Total, 1909-10.....	2,139	112

BALATA.

IMPORTS OF BALATA.

FROM—	POUNDS.	VALUE.
Europe:		
England	83,870	\$52,861
Total	83,870	\$52,861
North America:		
Canada	1,601	\$1,314
Panama	66,783	27,910
Barbados	1,288	876
Trinidad and Tobago.....	51,776	26,725
Total	121,448	\$56,825
South America:		
British Guiana	115,655	\$77,381
Dutch Guiana	390,877	287,299
French Guiana	17,296	12,651
Venezuela	587,952	279,755
Total	1,113,280	\$657,086
Total, 1912-13.....	1,318,598	\$766,772
Total, 1911-12.....	1,517,066	984,012
Total, 1910-11.....	878,305	624,702
Total, 1909-10.....	399,003	196,878
Total, 1908-09.....	1,157,018	522,872
Total, 1907-08.....	584,582	276,756
Total, 1906-07.....	799,029	305,041
Total, 1905-06.....	374,220	152,689

RE-EXPORTS OF BALATA.

	POUNDS.	VALUE.
Germany	1,083	\$12,354
Netherlands	22,385	16,581
United Kingdom	1,083	20,595
France	27,853	23,286
Canada	6,283	5,147
Total, 1912-13.....	118,334	\$77,963
Total, 1911-12.....	62,529	38,423
Total, 1910-11.....	264,589	230,575
Total, 1909-10.....	42,750	42,750
Total, 1908-09.....	223,907	223,907
Total, 1907-08.....	18,741	18,741
Total, 1906-07.....	12,659	12,659

GUAYULE.

IMPORTS OF GUAYULE GUM.

FROM—	POUNDS.	VALUE.
Europe:		
Germany	24,690	\$15,605
Total	24,690	\$15,605
North America:		
Canada	10,193,501	\$4,329,483
Total	10,193,501	\$4,329,483
Total, 1912-13.....	10,218,191	\$4,345,088
Total, 1911-12.....	14,238,625	6,463,787
Total, 1910-11.....	19,749,522	10,443,157

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER.

FROM—	POUNDS.	VALUE.
United Kingdom	45,107	\$97,445
Total	45,107	\$97,445
North America:		
Canada	87	\$7
Total	87	\$7
Total, 1912-13.....	45,194	\$97,452
Total, 1911-12.....	87,328	87,328
Total, 1910-11.....	115,601	115,601
Total, 1909-10.....	114,516	114,516
Total, 1908-09.....	60,655	60,655
Total, 1907-08.....	27,000	27,000

RE-EXPORTS OF ELASTICON, ETC.

	POUNDS.	VALUE.
Denmark		\$559
Total, 1912-13.....		\$559
Total, 1911-12.....		231
(Not reported before 1911-12.)		

SCRAP RUBBER.

QUANTITY AND VALUE OF IMPORTS, BY COUNTRIES.

FROM—	POUNDS.	VALUE.
Europe:		
Austria-Hungary	8,425	\$730
Belgium	944,272	78,172
Denmark	378,160	32,846
France	224,000	20,104
Germany	5,665,552	541,190
Italy	4,025,842	294,969
Netherlands	55,662	5,002
Norway	98,563	98,563
Romania	470,587	41,864
Russia in Europe.....	89,098	6,950
Spain	7,468,774	619,594
Sweden	6,639	2,035
Switzerland	1,791,754	166,064
Turkey in Europe.....	120,830	7,831
United Kingdom	724,051	60,282
Total	11,453,405	1,045,100
Total, 1912-13.....	34,969,446	\$3,021,296

North America:

Canada	7,210,245	\$598,259
Panama	40,414	2,168
Mexico	225,749	19,940
Newfoundland and Labrador	96,514	6,689
British West Indies.....	26,257	2,331
Guatemala	18,782	16,313
San Domingo	500	65
Total	7,782,541	\$645,765

South America:

Brazil	2,351	\$24
Colombia	33,746	2,450
Venezuela	972	80
Total	37,069	\$2,554

Asia:

Japan	91,456	\$4,932
Russia in Asia.....	12,902	1,060
Turkey in Asia.....	60,230	3,385
Total	285,969	21,408
Total, 1912-13.....	17,875	1,414

Australia and Tasmania:

Australia and Tasmania...	77,787	\$4,379
Pacific Islands	10,850	550
Total	88,637	\$4,929

QUANTITY AND VALUE OF EXPORTS, BY COUNTRIES.

	POUNDS.	VALUE.
Austria-Hungary	92,708	\$17,236
Belgium	424,479	61,790
Denmark	33,370	2,332
France	1,136,191	161,070
Germany	959,509	146,476
Italy	29,382	2,546
Netherlands	363,834	49,204
Sweden	52,729	7,045
United Kingdom	2,810,880	274,996
Canada	1,341,637	154,134
Japan	34,794	3,613
Total, 1912-13.....	7,269,465	\$880,442
Total, 1911-12.....	7,336,984	780,188
Total, 1910-11.....	7,049,729	723,664
Total, 1909-10.....	6,143,610	578,944
Total, 1908-09.....	4,071,795	402,897
Total, 1907-08.....	4,255,789	449,727
Total, 1906-07.....	4,756,621	548,695
Total, 1905-06.....	a	339,507
Total, 1904-05.....	a	204,945

(a) Not officially reported.

RE-EXPORTS OF SCRAP RUBBER.

	POUNDS.	VALUE.
United Kingdom—England	3,120	\$268
Canada	84,810	10,455
Total, 1912-13.....	87,930	\$10,723
Total, 1911-12.....	302,105	28,196
Total, 1910-11.....	401,231	43,338
Total, 1909-10.....	61,395	5,373
Total, 1908-09.....	38,506	2,093
Total, 1907-08.....	21,713	2,943
Total, 1906-07.....	105,463	9,444

RECLAIMED RUBBER.

QUANTITY AND VALUE OF EXPORTS, BY COUNTRIES.

	POUNDS.	VALUE.
Belgium	109,232	\$17,400
France	234,604	29,525
Germany	129,530	27,599
Italy	1,000	200
Russia in Europe.....	3,306	320
Sweden	52,679	10,700
United Kingdom	744,451	127,644
Canada	3,808,611	661,960
Japan	240,512	39,331
Australia and Tasmania...	89,322	18,225
Total, 1912-13.....	5,413,247	\$932,904
Total, 1911-12.....	5,397,806	875,501
Total, 1910-11.....	4,994,527	781,650
Total, 1909-10.....	3,622,556	535,795
Total, 1908-09.....	3,196,551	414,861
Total, 1907-08.....	2,947,974	418,738
Total, 1906-07.....	4,550,788	665,109
Total, 1905-06.....	4,084,696	511,843
Total, 1904-05.....	a	522,902

(a) Not officially reported.

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1913.

EXPORTED TO—	Belting, Lacing and Hose.	Boots.		Shoes.		For Auto- mobiles. Value.	All Other. Value.	Other Goods. Value.	Total Value.
		Pairs.	Value.	Pairs.	Value.				
EUROPE:									
Austria-Hungary	\$2,370	108	\$371	2,371	\$1,341	\$299	\$543	\$12,229	\$17,153
Azores and Madeira Islands	50			545	471		107	811	1,439
Belgium	6,000	113	328	63,113	37,295	401,900	466	57,969	504,890
Bulgaria	839	10	49	14,550	8,757	500		6	9,322
Denmark	10,750	959	1,426	52,776	25,617	16,611	14,374	6,560	75,338
Finland	539			48	30	1,545	2,441	1,478	6,033
France	32,116	36	118	54,252	27,436	20,205	2,626	140,077	232,578
Germany	16,773	934	4,561	237,409	132,154	401,196	1,658	376,899	973,141
Gibraltar							16	30	46
Italy	4,934	291	931	63,127	37,933	1,150	3,070	40,908	88,926
Netherlands	6,316			8,473	3,535	44	1,219	42,917	54,411
Norway	8,013			28,735	16,173	456	10,152	4,819	39,613
Portugal	790	38	116	3,324	2,317	282		506	4,011
Roumania	2,487			12,817	8,518	146			11,151
Russia in Europe	14,671			102	50	729	4,831	6,468	26,749
Spain	8,933	1,348	5,006	41,642	22,079	567	4,137	5,889	46,811
Sweden				1,769	987				987
Switzerland	2,554			758	579	5,301	70,055	5,398	83,887
Turkey in Europe	2,400	104	477	13,861	8,368		268	1,885	13,398
United Kingdom	249,029	31,081	64,329	109,790	51,972		114	271	52,357
				757,404	358,510	1,125,718	119,864	1,052,223	2,969,673
Total, Europe	\$409,557	35,022	\$77,912	1,466,866	\$744,122	\$1,977,029	\$235,941	\$1,757,353	\$5,201,914
NORTH AMERICA:									
Bermuda	\$752			715	\$430	\$401	\$488	\$3,125	\$5,196
British Honduras	1,261			116	62	163	81	565	2,132
Canada	472,645	13,009	\$44,725	82,624	46,074	1,324,459	17,757	1,159,955	3,065,615
Costa Rica	12,468	15		120	75	2,793	2,096	5,247	22,694
Guatemala	8,694			72	40	2,224	672	5,393	17,023
Honduras	4,008			36	28	299	46	2,601	6,982
Nicaragua	3,216	181	454	36	35	429	248	6,900	11,282
Panama	182,671	3,945	12,522	2,455	2,022	19,466	13,822	24,922	255,425
Salvador	13,169	5	16			1,705		12,422	27,312
Mexico	438,885	1,947	8,342	6,431	3,480	203,883	47,683	104,369	806,642
Miquelon, etc.	10	240	612	546	341			963	
Newfoundland and Labrador	6,191	5,231	13,296	49,999	31,243	693	1,895	13,639	66,957
West Indies—									
British	9,989	74	405	853	500	52,825	658	13,581	77,958
Cuba	156,069	217	446	1,386	733	12,322	106,114	144,006	419,690
Danish	948	1	4	351	311	540	838	751	3,424
Dutch	154			88	56	767	40	987	2,004
French						115	1,088	284	1,497
Haiti	1,579	24	68	445	202	765	108	3,155	5,877
San Domingo	15,596	5	34	654	555	2,306	3,886	6,130	28,507
Total, North America	\$1,328,305	24,881	\$80,939	146,927	\$86,219	\$1,626,155	\$197,530	\$1,508,032	\$4,827,180
SOUTH AMERICA:									
Argentina	\$40,011	122	\$407	25,210	\$15,045	\$8,153	\$16,039	\$76,405	\$156,060
Bolivia	649	48	126	312	173	106		318	1,372
Brazil	41,177	1,229	4,236	76,031	43,861	47,537	32,864	81,585	251,260
Chile	57,970	2,001	8,720	20,434	12,677	2,844	31,076	24,812	138,099
Colombia	11,992			976	637	16,211	5,838	5,507	40,185
Ecuador	8,489			148	105	8,459	1,786	2,766	21,605
Guiana—British	1,260			3,575	1,661	2,726	1,911	1,050	8,608
Dutch	184					63	6	164	417
French								28	
Peru	26,308	552	2,504	498	306	1,273	3,030	8,088	41,509
Uruguay	18,967			42,935	25,523	1,990	8,730	18,992	74,202
Venezuela	9,383			352	208	10,703	160	11,910	32,364
Total, South America	\$216,390	3,952	\$15,993	170,471	\$100,196	\$100,065	\$101,440	\$231,625	\$765,709
ASIA:									
China	\$11,272	449	\$1,063	333	\$264	\$622	\$86	\$4,298	\$17,605
Japanese China	929					152		108	1,189
Korea	3,071			10	64	240		1,775	5,150
British India	9,272			96	53	882	418	4,457	15,082
Straits Settlements	2,487					1,133	2,078	391	6,089
Other British						337	350	98	785
Dutch East Indies	24			192	126	260	1,516	1,308	3,834
Hongkong	413	50	108			677	617	2,194	4,009
Japan	77,900	13,055	23,790	46,717	27,977	29,975	12,185	86,364	258,191
Asiatic Russia	130	4	34	12	12			18	194
Siam	135					1,334		101	1,570
Turkey in Asia	1,000			12,198	7,183			156	8,339
Total, Asia	\$106,633	13,558	\$24,995	59,608	\$35,679	\$36,212	\$17,250	\$101,268	\$322,037
OCEANIA:									
Australia and Tasmania	\$186,663	4,647	\$12,996	\$340,938	\$163,150	\$58,068	\$3,726	\$114,787	\$539,390
New Zealand	43,108	22,873	47,218	26,618	21,122	26,270	5,722	58,074	201,514
Other British		262	238	1,764	1,412	37		338	2,025
French Oceania	999	10	26	5,030	4,468	956	384	567	7,400
German Oceania	66							54	120
Philippine Islands	79,637	1,149	2,437	5,600	3,459	100,476	37,512	118,005	341,496
Total, Oceania	\$310,473	\$28,941	\$62,915	379,950	\$193,581	\$185,807	\$47,344	\$291,825	\$1,091,945

EXPORTED TO -	Belting, Packing and Hose.	Boots.		Shoes.		For Auto- mobiles.	All Other.	Other Goods.	Total
		Pairs.	Value.	Pairs.	Value.	Value.	Value.	Value.	Value.
British West	\$1,895	48	\$113			\$89		\$190	\$2,287
British East	171,998	3,124	11,457	4,023	\$2,127	17,057	\$5,759	22,190	230,588
French Indo	518					536	17		1,077
French Indo	1,149			24	13			90	1,252
French Indo				42	22			3	25
French Indo				36	1		556	219	59,401
French Indo	58,605			3,200	1,755		5,501	151	7,435
French Indo				8			10	90	216
French Indo				312	212				212
French Indo						270			270
Total, All	\$4,143	3,174	\$11,576	7,645	\$4,156	\$17,952	\$11,953	\$22,933	\$302,763
Grand Total, 1912-13...	\$2,605,551	109,528	\$274,330	2,231,467	\$1,163,953	\$3,943,220	\$611,458	\$3,913,036	\$12,511,548

		Pairs.	Value.						
Grand Total, 1910-11	\$1,315,484		\$1,545,076	\$1,502,890		\$2,657,809	\$546,833	\$4,144,273	\$11,167,289
Grand Total, 1910-11	2,163,416		\$3,984,332	\$2,219,430		2,085,107	592,470	3,886,825	10,947,248
Grand Total, 1909-10	1,960,825		\$3,791,084	\$1,984,739				5,115,331	9,060,895
Grand Total, 1908-09	1,498,445		\$3,396,435	\$1,292,673				3,823,956	6,615,074
Grand Total, 1907-08	1,347,775		\$3,080,253	\$1,614,290				3,743,040	6,705,105
Grand Total, 1906-07	1,336,775		\$3,310,420	\$1,231,898				3,729,643	6,214,910
Grand Total, 1905-06	1,221,159		\$2,693,690	\$1,505,082				2,966,144	5,692,385
Grand Total, 1904-05	994,100		\$2,390,539	\$1,214,342				2,572,375	4,780,817
Grand Total, 1903-04	880,010		\$2,310,420	\$1,231,898				3,729,643	6,214,910
Grand Total, 1902-03	819,985		\$2,307,401	\$1,056,491				2,299,875	4,176,351
Grand Total, 1901-02	634,146		\$1,594,708	\$1,046,315				1,781,941	3,462,402
Grand Total, 1900-01	565,726		\$1,459,100	\$724,015				1,727,527	3,017,268

* These numbers of pairs and values are for boots and shoes combined. Tires were not specifically reported before 1910-11.

SUMMARY.

	1910-11.		1912-13.	
	Pounds.	Value.	Pounds.	Value.
IMPORTS OF FOREIGN MERCHANDISE—				
Crude India Rubber	7,146,600	\$77,446,000	110,210,173	\$93,013,255
Guayule Gum	19,749,522	10,443,157	14,238,625	6,463,787
Gutta Percha	1,648,921	390,548	1,204,406	225,797
Gutta Jelutong (Pontianak)	51,420,872	2,872,633	48,795,268	2,255,050
Balata	878,305	624,702	1,517,066	984,012
Scrap	26,948,000	2,334,870	26,293,192	2,095,605
Total unmanufactured imports (a)	172,691,880	\$92,910,513	202,258,730	\$105,037,506
Manufactures of India Rubber.		61,283		
Manufactures of Gutta Percha.		115,601		87,328
Elasticon, etc.				
Total manufactured imports (b).		\$1,052,009		\$1,003,162
				\$1,350,888
RE-EXPORTS OF FOREIGN MERCHANDISE—				
Crude India Rubber	5,267,588		5,610,951	\$4,890,905
Guayule Gum	264,589	230,575	62,529	38,423
Guayule Gum	340,405	175,995	197,948	98,517
Gutta Percha	62,391	19,235	1,011	945
Gutta Jelutong	401,231	43,338	302,105	28,196
Scrap			118,486	6,079
Total unmanufactured re-exports (c)	6,336,204	\$5,908,425	6,293,030	\$5,063,065
Manufactures of India Rubber.		\$29,356		\$6,681
Manufactures of Gutta Percha.		8,687		65
Elasticon, etc.				231
Total manufactures re-exported (d).		\$38,043		\$6,97
				\$36,438
EXPORTS OF DOMESTIC MANUFACTURES—				
Scrap	7,049,739	\$723,664	7,336,924	\$780,188
Reclaimed Rubber	4,994,527	781,650	5,397,806	875,501
Manufactures of India Rubber and Gutta Percha.		10,947,248		11,167,289
Total domestic manufactures exported (e).		\$12,452,562		\$12,822,978
				\$14,324,894
GRAND TOTALS—				
Imports (a) and (b)		\$93,962,522		\$107,225,156
Less re-exports (c) and (d).		5,946,468		5,070,042
Consumption of foreign imports..		\$88,016,054		\$100,970,626
Exports of domestic merchandise (e).		\$12,452,562		\$12,822,978
				\$14,324,894

Shall We Lose the Panama Trade?

THE most wonderful sight in New York City is not its sky-piercing buildings, its panorama of harbor and shipping or its many hundred miles of house-lined streets. It is the vast, sweeping tide of humanity which, between four and six o'clock, is seen moving up Park Row and across City Hall Park toward the entrance of Brooklyn bridge. In every direction, as far as the eye can reach, people are moving toward one common point. Here they come, thousands, tens of thousands, hundreds of thousands, each

listless indifference upon another undertaking, as great in a world-sense as the Brooklyn bridge is locally. Three hundred and ninety-three years have heard of the project of a canal across the isthmus, joining the land-masses of North and South America. A few more months and the commerce of the world will flow through the long-delayed opening in the bar which has existed within knowledge of man. In the first months there will pass through the locks of the canal a tonnage greater than the entire flotilla of the world when Charles



PANAMA PICTORIAL CHART.

Showing how the opening of the Panama Canal will make a quick, direct route possible between the tropical territories of the Pacific and Atlantic ports of the United States and of Europe.

Courtesy of Tropical Exploration Syndicate, Limited, London

intent upon his own errand, little mindful of the tremendous aggregate of which he is a part. Some are strangers, passing for the first time. Others, who have crossed many times, are passing for the last time—going to their homes to die. But their places will be taken by still others and tomorrow the throng will be mightier than today, as that of today is greater than that of yesterday.

Yet within the memory of men not old that place of thronging myriads was a street of quiet, second-class hotels, decorous newspapers and sleepy shops. Then the Brooklyn bridge was built and the traffic of the sundered communities passed through the erstwhile quiet streets. The men who saw the building of Brooklyn bridge could not imagine the crowds which now converge at the bridge's entrance because such a conception was beyond the imagination of man. But some could see more clearly than others and were able to declare that the traffic would increase until the capacity of the bridge would be inadequate for its work; while the great majority of New Yorkers regarded the undertaking with indifference or cheap cynicism.

Another generation has grown up and looks with the same

the Fifth first considered piercing the isthmus, yet this will be a mere trickle compared with the mighty currents which will flow with ever-increasing volume until the capacity of the canal is overtaxed. The crowd of vessels moving upon Panama will be like the crowds of people converging at Brooklyn bridge. And they will carry not only vast quantities of goods, but they will carry men—merchants with alert brains and wide-open eyes and with money in their pockets and more in their tills at home. They are going there to buy and to sell, to offer bargains and to find them. From every country of the world comes the same story of making ready for the trade of Panama—that is, from every country except our own. But there is equal unanimity in the report that our own business men are fast asleep, comfortably dreaming of the great benefit which will come to them from the canal which their government has built, and without the slightest evidence of waking up and really grasping those benefits which other hands—British, French and German—are eagerly reaching out to secure. The trade—the profits—are there. Whoever goes after them is going to get them, and when he gets them he is going to keep them.

Panama makes a small spot on the map of the world, but the world is big and the world is going to Panama. The republic, little as it seems, is more than half as large as all New England. There are millions of acres of fertile land, most of it untouched, or scarcely touched by man. But the marvelous growth of the tropical plants is not more rapid than will be the transformation of those acres into gardens,



Courtesy of Puck, New York.

THE AWAKENING OF RIP VAN WINKLE UNCLE SAM.

with the world for a market. Yesterday Panama was rocks, swamp and tropic forest. Tomorrow it will be city and gardens. Those who doubt it are the same men who said that Brooklyn bridge never could be made to pay. The canal zone will be an arcade, a fair, a mart for the world's goods, a meeting ground as well as a passage way for the merchants and manufacturers of every land.

Let our business men make no mistake about this matter. If they establish agencies in Panama with full lines of samples they will gain customers in Norway and Kamschatka, as well as in Panama and Costa Rica. The cost may well be met by the local trade, and there will be profit from the beginning for those who manage wisely and are early on the ground.

Panama is nearer to New York than is Salt Lake City, both in miles and in cost of transportation. The familiar excuses for sloth on the part of our business men are absolutely lacking. Order is maintained by the little republic and guaranteed by the United States. The money system is identical with our own. The sanitation, in charge of the United States government, is the best in the world. Health conditions are better than in any city of the United States. Banking facilities, good now, will soon be identical with those of the United States, through the establishment of American branch banks, provided for in the new currency law. The postage rate from the United States is the same as that within our own territory. Panama is at the beginning of a "boom," the greatest that the world has ever seen or ever will see. It is an event unique in the history of the world and one which the physical conformation of our planet decrees shall remain such. It is the beginning of an era, not transient but enduring while the world shall endure.

New York is more than three thousand miles nearer Panama than the average of the European ports from which sailings for the canal will be made. Yet the European merchants are preparing to take the Panama trade and the Americans are letting them do it. The reports of the activity of the former and the inactivity of the latter are too persistent and too precise to doubt. More than that, the Americans are actually turning away trade which is offered them, through a provincial insistence in following their own accustomed methods of business. In Panama, as in the rest of Spanish America, and, indeed, the rest of the world, business

is based on a system of long-time credits, and there is no use expecting a merchant who sells on credit to pay cash for his goods, especially when others are ready to supply him with the credit. The wisdom of extending this needed credit—with due regard for ordinary prudence—is obvious. An agent on the ground need have little difficulty in knowing to whom he may give credit.

Fortunately, the new currency law makes it possible for the American merchant to be more liberal in the matter of credits than has been the case in the past. Our system of narrow and rigid credits has been largely the result of our inelastic currency system. But the new law, which provides for bank note issues based on sound commercial paper, removes the dread of a panic from the business man who, in the past, has dignified his timidity with the name of conservatism. It is the opinion of the leading financial authori-



Courtesy of United Fruit Company.

FIRST BOAT PASSING THROUGH GATUN LOCKS.

ties of the country that there never will be another panic. "Nor is there any reason," said one of them in discussing the measure, "why a good business man with a sound business, should ever again be forced into bankruptcy."

The business man who has assets can now borrow money and be free to conduct his business on a more liberal scale than before, both in the matter of volume and of credits. Thus is removed the last "lion in the path" of the American manufacturer who would add to his profits by foreign sales. Panama offers him opportunity for his first world venture. Any kind of goods can be sold there that can be sold in New Orleans. If he has the intelligence to produce good wares, the same intelligence will sell them. Is he a lineal descen-

dant of the men who actually existed and who said that the Brooklyn bridge would never carry enough traffic to pay the toll-takers? Is he going to allow this great bazaar of the



CATHEDRAL SQUARE AND HOTEL GRAND CENTRAL, PANAMA CITY.

world's commerce to be filled with the goods of every country but that of the nation which pays the bills? If he yawns, stretches, admits that he has heard the alarm clock telling him that now is the time to get up and go after Panama trade



WILD *Castilloa*, SHOWING STUMP OF BIG TREE FROM WHICH SPROUTS HAD GROWN.

—and decides that he will go after it as soon as he has slept a little longer—he will be eliminated from the situation and the British and German traders may continue their cheerful gibes about the canal which we built for them.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE ONLY "HEVEAS" IN PANAMA.

SOME four years ago the editor of THE INDIA RUBBER WORLD sent to friends in Panama 1,000 *Hevea* seeds. These were planted, but white ants, armadillos and other enemies destroyed



PANAMA'S ONLY *Hevea* TREES.

most of them. A few survived, however, and are growing in the jungle on the Azuero peninsula. As far as known, these are the only *Heveas* in the Republic of Panama.

INDIA RUBBER IN SHIPBUILDING.

In a couple of articles in the issue of THE INDIA RUBBER WORLD of October, 1912 (pages 13 to 16), the subjects of "India Rubber in the Navy" and "Rubber Manufactures in Marine Warfare" were discussed. The numerous small articles composing a battle ship's equipment were described in detail.

Since then a broader question has arisen with reference to the internal or external use of rubber in shipbuilding, in the form of a suggestion for its employment in the bodies of ships for protection against the penetration of water.

This proposal emanated from an Austrian scientist at a Vienna meeting of German scientific men held last fall. His contention was that when a thick sheet of rubber with a high proportion of resin was pierced by a projectile the rubber, in consequence of its elasticity, would tend to return to its original position, and that the resin would stop the puncture so that no water, or at most a very little, could penetrate into the body of the ship. He made the further suggestion that in order to have this principle adopted on a large scale rubber of a very inferior and therefore of an inexpensive grade could be used. But one of the other scientists present pointed out that there were strong objections to the use of inferior rubber, because of its lack of durability. He went on to state that the life of a modern man of war ranged from twenty to thirty years, and it could hardly be expected that inferior rubber would continue to hold its original elasticity that length of time, as cheap resinous products are likely to soon become hard and brittle.

Annual Meeting of Rubber Club of America.

THE annual meeting of the Rubber Club of America was held in the handsome gallery of the Art Club, Boston, on the evening of Tuesday, April 21.

President George B. Hodgman presided and the reports of officers were read and approved. From the secretary's report it was learned that the membership showed a slight gain over last year, there now being 66 firm members (an increase of 15), 200 active members (the same number as a year ago) and 58 associate members (a decrease of four). During the year, six members died. Edward B. Kelley, of the Mechanical Fabric Co., Providence, an active member, and one of the most popular, died May 13, 1913. Frederick M. Shepard, of New York, an honorary member, passed away June 30. Alexander Macpherson, of the Oxford Rubber Co., Cambridge, Massachusetts, an associate member, died October 7. Jacques Huber, an honorary member, of the Museu Goeldi, Pará, Brazil, died at that city February 18, 1914. George P. Whitmore, of the Revere Rubber Co., one of the founders of the New England Rubber Club, and its first treasurer, was taken February 22, and J. Elwood Lee, of the Lee Tire & Rubber Co., Conshohocken, Pennsylvania, a firm member, died April 8.

The treasurer's report gave an account of the receipts and expenditures of the club, and showed a balance of over \$1,400 on the right side.

THE ELECTION OF OFFICERS.

The election of officers was the next business and resulted in the choice of the following:

President, George B. Hodgman, Hodgman Rubber Co., New York; vice-president, Frederick H. Jones, Tyer Rubber Co., Andover, Massachusetts; treasurer, J. Frank Dunbar, Boston; secretary, H. S. Vorhis, New York.

Honorary vice-presidents: Augustus O. Bourn, L. Dewart Apsley, John H. Flint, Alexander M. Paul, Arthur W. Stedman, Henry C. Pearson and Frederic C. Hood.

Directors: Francis H. Appleton, F. H. Appleton & Son, Boston; H. T. Dunn, Fisk Rubber Co., Chicopee Falls, Massachusetts; H. S. Firestone, Firestone Tire & Rubber Co., Akron; George E. Hall, Boston Woven Hose & Rubber Co., Cambridgeport, Massachusetts; Howard E. Raymond, The B. F. Goodrich Co., Akron; Homer E. Sawyer, United States Rubber Co., New York; Henry Spadone, Gutta Percha & Rubber Manufacturing Co., New York; Elisha S. Williams, Rubber Goods Manufacturing Co., New York, and Albert Zeiss, Arnold & Zeiss, New York.

No other business coming before the meeting, it adjourned. This was followed by a meeting of the Executive Committee, which consisted of Frederick H. Jones, chairman, Henry C. Pearson, Frederic C. Hood, Albert Zeiss and Henry Spadone. At this meeting the various actions of the directors were approved. It was decided to locate an office exclusively for the business of the Club, at 17 Madison avenue, New York, to secure the entire services of Secretary Vorhis and to join the Chamber of Commerce of the United States of America.

The following committees were chosen:

Nominating Committee: George E. Hall, Boston Woven Hose Co., Cambridgeport, chairman; Hon. L. D. Apsley, Apsley Rubber Co.; Charles T. Wilson, Wilson Trading Co., New York; E. E. Wadbrook, Arnold & Zeiss, New York, and Russell Parker, Parker Stearns & Co., Brooklyn.

Auditing Committee: E. F. Dewing, Boston Rubber Shoe Co., and J. H. Learned, Revere Rubber Co.

Entertainment Committee: W. H. Arnold, Arnold & Zeiss, New York, chairman; W. L. Procter, United States Rubber Co., New York; Ira F. Burnham, Stoughton Rubber Co., Boston; E. H. Kidder, United States Tire Co., Boston, and A. A.

Glidden, Hood Rubber Co., East Watertown, Massachusetts.

Sports Committee: William L. Pitcher, Easthampton Rubber Thread Co., Easthampton, Massachusetts, chairman; Francis H. Appleton, Jr., F. H. Appleton & Son, Boston; John S. Clapp, New Jersey Rubber Co., Boston; Philip E. Young, Acushnet Process Co., New Bedford, Massachusetts, and Harold P. Fuller, E. H. Clapp Rubber Co., Boston.

Dinner Committee: William E. Barker, United States Rubber Co., New York, chairman; Robert L. Rice, Hood Rubber Co.; Theodore W. Bassett, U. S. Rubber Reclaiming Co., New York, and Andrew H. Brown, Meyer & Brown, New York.

Committee on Resolutions: E. E. Wadbrook, Arnold & Zeiss, New York, chairman; Arthur W. Stedman, Boston; Henry C. Pearson, THE INDIA RUBBER WORLD, New York.

THE DINNER.

It was a happy idea of the Dinner Committee to have the long head table and the three radial ones set in the big picture gallery of the Art Club, where the walls were covered with a wonderful collection of examples of the graphic art from the European centers. The tables were handsomely decorated with jonquils and greenery. At President Hodgman's right was the speaker of the evening, Col. Henry L. Kincaide, of Boston, and at the head table were also seated several of the honorary vice-presidents. Previous to being seated, however, the president proposed that in view of the happenings in Congress and in Mexican waters, it would be appropriate to sing "America," which was done with perhaps more real patriotic feeling than artistic harmony.

Of the dinner it need only be said that it was excellent, well served, and highly appreciated by all. At its conclusion, the president proposed a silent toast to the deceased members, after which he delivered the following address:

ADDRESS OF PRESIDENT GEORGE B. HODGMAN.

"Since the last annual meeting of the Rubber Club of America, held a year ago in Boston, I feel that we have been able to make considerable progress along the lines suggested by our former president, Mr. Frederic C. Hood, namely, that this club should be of benefit and help to the entire rubber industry of the United States.

"This has been made possible by the decision to engage a secretary who would give a certain portion of his time to the necessary work of the club, because heretofore, even with the best intentions and at the cost of much self-sacrifice, the officers had not been able to give to the club's affairs the attention which this work requires, for men who are engaged in active business cannot without sacrificing more time than should be expected of them, look after the various details of the work of a business organization such as that into which our club has now developed. Therefore with the efficient aid of Mr. H. S. Vorhis, who was appointed secretary last July, we have been able to go forward as we could not have done before. It is my intention to mention briefly certain phases of our work for the past year, and to point out the possibilities for the future."

He then went on to mention the efforts made by a committee appointed by the club in 1912, in conjunction with a committee appointed by the International Rubber Conference held in September of that year, to decide upon some satisfactory method of nomenclature for the various sorts of rubber. While this question has received a great deal of attention from these two committees working together, it was thought, owing to the present effort to standardize plantation rubbers, that the matter should be left in abeyance for the present. Mr. Hodgman then devoted a paragraph to the very important matter of rubber stealings.

and told what efforts had been made, with the co-operation of prominent scrap dealers, to suppress this exceedingly annoying practice; and he asked all the members of the trade to communicate any information regarding the stealing of rubber that might come to their knowledge to the secretary of the club.

He told what had been done in the way of establishing in the rubber trade a system of arbitration, under the auspices of the Chamber of Commerce of the State of New York, and mentioned that a number of disputes relative to the quality of rubber had been arbitrated with a vast saving of time and expense and to the great advantage of both sides. He then took up several very interesting topics, including rubber statistics and a new grouping of club membership and continued as follows:

RUBBER STATISTICS

"The fact that there have been no reliable statistics collected showing the extent and importance of the rubber industry in our country, prompted the Executive Committee to make an attempt to secure such statistics for the year 1912, believing that such a record, if it could be secured, would show that the manufacture and sale of rubber goods had reached total proportions which were not actually realized, and would place our industry in its proper position among the great industries of the country. The statistics furnished through the Census Bureau at long intervals are not complete in many ways. It was therefore decided to submit an information blank to all the rubber manufacturers who could be reached, asking their co-operation. . . . A list was prepared, and statistical blanks were sent out. This being a new departure, the number of responses received up to date has been very gratifying, although it was necessary to send out a second letter, attempting to explain more fully the situation, and to point out that all the replies were kept absolutely confidential, owing to the fact that no manufacturer was required to sign the blank sent to him, as it had a number only, and the replies were to be seen by our secretary only, who as you know has no connection with the rubber trade except as secretary of our club.

"In spite of this, however, some manufacturers seemed to feel that we were asking them to divulge private information which might become public, but these are a very few in number in comparison with those who have replied, and I am glad to say among the latter are the largest concerns in the country. Although these statistics when collected may not be complete, owing to the number of smaller manufacturers who have not responded, they will at least give a fair idea of the extent of our industry, and will be of great interest, and may result in pointing out that in certain lines there is now an over-production, and prevent the inauguration of new enterprises, which may desire to enter certain lines of the rubber business under the impression, which I believe has existed, that any new manufacturer of rubber goods would find a large and profitable market for his product.

GROUP MEMBERSHIP.

"It is one of the fond hopes and expectations of your president that the Rubber Club may in the near future extend its sphere of usefulness by having its membership sub-divided into groups, each representing the particular line of business in which our members are engaged. This has been done very successfully by the Silk Association, which is one of the strongest trade organizations in existence today, and whose membership to a large extent is divided into organized and classified divisions, such as importers, manufacturers of yarns, sewing silks, dress silks, ribbons, etc., and I see no reason why our organization cannot have its own classified divisions or groups."

He then enumerated 16 groups into which the rubber trade might logically be divided, and continued:

"It is not likely at first that all of these groups would be possible, but at least there could be formed groups of seven or eight of the more important branches of our trade. Those of our

members who would be included in these divisions, in addition to their regular membership in the club, could have their separate organizations, and do special work for the interest of their branch of the industry, but all would co-operate with the main organization in matters of general interest and benefit, and all of these organizations should have their office with the office of the Rubber Club, with the secretary of the Rubber Club as their secretary. One or two organizations already in existence are considering this matter favorably, and when the plan has been fully matured it will be presented to our membership, with suggestion as to the amendment of our constitution to permit this change if it is considered an advantageous plan."

THE CLUB AND ITS SECTIONS

He spoke of the changed conditions of the American rubber manufacturing industry under the new tariff and urged that all the club members and others interested in this industry should watch for undervaluations on imported goods and communicate any such case to Mr. Vorhis, the secretary. He also dwelt on the necessity of watching Federal legislation, and spoke of the Lindquist Bill, popularly known as the Pure Fabric Bill, which, if passed, would be most detrimental to the footwear manufacturers; and he continued:

"We have decided to ally ourselves with the Chamber of Commerce of the United States of America, an organization whose headquarters are in Washington, and whose particular function is to protect the rights and further the interests of American manufacturers, and through this source we will be able to learn of any proposed legislative actions which may affect our interests."

He stated that the growing activities of the club had made it absolutely essential that the secretary should devote his entire time and energy to this work and added that after the 1st of May Mr. Vorhis would occupy all of his time, instead of part of his time, as during the past year, with the work of the club. He then concluded his address as follows:

INFORMING THE PUBLIC REGARDING RUBBER GOODS

"It seems to me that there is too little knowledge of the proper sort on the part of the public at the present time concerning rubber goods and their uses. The manufacture of rubber goods appears to many people to be something surrounded with more or less mystery, but this does not prevent these same people, in their use of our various products, from expecting service far beyond what some articles were intended, or it is possible, to give for the prices which they are willing to pay.

"I believe that a properly and conservatively conducted campaign of publicity as to the nature of rubber goods, and education as to their proper use, would appeal to thoughtful people, and could be conducted through our club at little expense and with much profit. People are always ready to read what is interesting, and this subject has possibilities of interest which, if treated properly, should give it wide publicity.

THE CLUB'S SOCIAL SIDE.

"The social activities of our club have by no means been lost sight of on account of our having devoted more energy to the business side. Our summer outing at the Belmont Springs Country Club last July was well attended and was a very enjoyable occasion. Our annual banquet in January of this year in New York had a record attendance, and I believe that all of us who were able to be present enjoyed the opportunity for good fellowship, and the interesting addresses which were given by our distinguished guests.

"It is the intention of the officers of the club also to make our annual meetings of more general interest by having an informal dinner at these times, such as is being given this evening. We realize that our club was formed originally to promote sociability and good fellowship among its members, and that we must not lose sight of this important feature, for it is by getting together on these occasions that we become better acquainted, and our

endeavors along business lines are very much helped by these social gatherings.

"In conclusion I want to express my appreciation of the faithful work of our Executive Committee. These men, some of whom live in New England, have been present at each of our quarterly meetings in New York, except in the case of illness, and it has only been through their co-operation and interest that the success of the past year has been made possible. It is a service which, given with considerable sacrifice, is something for which no money can pay, and has been given with the sole purpose of benefiting first of all our own membership, and indirectly the rubber industry as a whole.

"I bespeak from the members of the club your hearty support in all our endeavors, and feel that if this is done your organization will become increasingly powerful as the years roll on. Co-operation in business is the order of the day. Our industry has been somewhat lacking in this principle in a broad way. The Rubber Club furnishes the means for all of us to work together, and to put our industry in the place where it rightfully belongs."

The address elicited hearty applause, and when this subsided the president introduced Colonel Henry L. Kincaide, of Boston.

COLONEL KINCAIDE'S ADDRESS.

The speaker opened his remarks by explaining that he was a member of the party representing the Boston Chamber of Commerce, who last year made an extended trip to the principal South American cities. Then, starting with the Panama Canal, which he considered the greatest engineering feat in the history of the New World, and one of the most important promoters of commerce, he justified the decision to have a lock canal rather than to attempt one at sea-level. He explained how the present canal is considered immune from attack either by water, land or even from the air above.

South America, he said, was an interesting country from every view-point. For the first thousand miles south of Panama it is most dreary. The great mountains frown down upon the narrow seacoast. There are few harbors, none where steamers can be docked, but where all freight must be lightered. This showed the necessity of careful, secure packing, for in many places the handling seemed needlessly rough, as if the laborers were rather anxious that the cases might fall apart sufficiently to allow some of their contents to "get lost." Then again, this showed the need of such packing as would prevent the humid atmosphere from reaching and damaging the goods.

Lima, Peru, is an interesting city. Its streets are narrow, the houses mostly having a projecting second story which overhangs the narrow sidewalk. Like all Latin-American cities, it has a central plaza where people congregate in the evening to promenade, and listen to the band concerts. Their summer is our winter, but a strong Antarctic current sweeps up the western coast, which tempers the heat in summer and increases the severity of the winter. Blankets are needed in the summer nights even near the equator. The mountains are so near the seacoast that many of the cities are built on terraces on the mountain side. The population of Peru is from 65 to 75 per cent. Indians, peaceable, unprogressive, living in mud huts and content to live without labor. It is next to impossible to inculcate in them any ambition. Peru suffers today from its recent war with Bolivia. There is more or less political unrest there. Mr. Kincaide told of meeting Billingshurst, the acting President, in order to reach whom, he was conducted through several locked doors, each one guarded by soldiers.

In all South American countries except Brazil, Spanish is the language spoken. In Brazil it is Portuguese. The dollar in Panama is worth 50 cents gold. In Chili it is 20 cents. In the Argentine it equals 44 cents, but in Uruguay, so good is the government's credit that its dollar is worth \$1.04 our money. In Brazil the pound sterling is exchanged for 15 milreis. In all these countries the cost of living is much higher than in

the United States. Everything is more expensive than with us. American \$5 shoes cost \$9 to \$12, and \$5 hats sell for \$8 to \$12. Prices are "take it or leave it." The import duties are in part the cause of these high prices, ranging as they do from 30 to 40 per cent. in all these countries.

The English and the Germans are ahead of us in South America. They already have an established trade. They have learned to cater to the tastes, customs and character of the Latin-American merchants. The Englishmen and Germans bring their ships there. They invest their money there; they bank there. There isn't an American bank in all South America. Every bill of exchange goes through a foreign bank, and you may be sure each one is scrutinized very closely, and prices and terms are therefore revealed to our business competitors in Europe. It is an absolute necessity, if we would develop our commerce, that we should have an American bank, with a branch bank in each of the leading commercial centers.

Bolivia is somewhat more advanced than Peru. Its capital, La Paz, is the highest city in the world. Owing to transportation, cost of living is high. Coal costs \$50 per ton, and only three families there use coal for heating. There are 1,000 miles of railways in Bolivia. The country is rich in mines of iron, copper, silver and gold; in fact iron and copper may be seen sticking out on the surface of the mountains. The mines are worked mainly by Americans.

Chili is 2,600 miles long, and for the most part about 100 miles wide. The nation is practically ruled by about 400 families. Valparaiso and Santiago are very enterprising cities. The wealth of the nation comes mainly through its exports of nitrate, which goes all over the world. Santiago is a most attractive city, and is said to have the most beautiful women in the world. The climate is delightful, seldom below 40 degrees or above 70 degrees, with a moisture which makes the city very healthful. The speaker referred to the incident of the American sailors from the U. S. Battleship "Baltimore" and the consequent anti-American sentiment, but Consul Fletcher has done much to inculcate a better feeling, though the people still deem us imperialistic. We must not cross their sensitive natures. Americans, or, in fact, anybody, who wishes to do business with them, must do it their way. There must be no brusqueness, but, on the contrary, extreme courtesy must be maintained. There can be no Yankee "hustle"; no American way of making a town a day. He must camp out on his prospect four, five or six days. The first day he calls and exchanges the most punctilious courtesies, the next, calls and inquires after the merchant's health, perhaps invites him to lunch, at which, however, he must never broach any business subject; two, three, four days more, and then he can ask the merchant to look over his samples. Such is the way the English and German salesmen manoeuvre, and succeed in securing big orders. The Colonel said he could enumerate many cases where lack of this courtesy and thoughtfulness lost trade to American salesmen.

The trip across the Andes is the most wonderful, the most beautiful in the world. From Santiago to Mendoza there is a constant change of scenic beauty. In winter the railway is sometimes blocked by snows for a month at a time, but in summer there can be no more delightful trip than across the mountains into Argentina.

Argentina is the richest country in South America, and one of the most fertile. You ride across a level plain hundreds of miles in extent between Mendoza and Buenos Aires, and the latter city is one of the wonders of the Western Hemisphere. It has a beautiful harbor on which \$30,000,000 has already been spent and \$20,000,000 more will be expended in making this one of the safest and most commodious in the world. When the speaker was in that city there were 116 steam vessels and 200 sailing vessels in the harbor, and not one bore the American flag.

The imports amount to billions of dollars a year. Our own exports last year were \$60,000,000 to Argentina. American goods

are considered better than European and we should have a good market there if we go after it properly and then deliver the goods promptly and packed as requested. The highest and most costly class of merchandise of all kinds that the world produces may be found in its retail stores, and the people have the money to buy it. There are great opportunities for making money there. The speaker told of a 30-year-old passenger on the boat with him who was considered worth between \$30,000,000 and \$40,000,000. He also spoke of an Italian immigrant who started digging in the streets, then bought a push cart, and afterwards a horse and wagon, peddling the wine which he manufactured. He now is worth between \$15,000,000 and \$20,000,000.

The park system, subways and highways in Buenos Aires are as fine as in any European capital.

Rio Janeiro is another enterprising, modern city with an excellent harbor, one of the most picturesque in America. The city has a suburb built by the president of Brazil which is a model in every respect. Here working men's homes, picturesque and comfortable, are rented at \$6 and \$8 a month. Immigrants are especially favored, their expenses are frequently paid to inland points where they are guaranteed employment, or, if they desire, are given tools and seeds and a piece of land to cultivate. On the steamer on which Colonel Kincaide sailed from that city twenty foreigners who had started as immigrants in Brazil, deposited their savings with the purser and to his astonishment those twenty people were taking from the country fifty thousand dollars in gold. In many respects the United States can look to Brazil for enterprise and progress. Sao Paulo is a city of 400,000 population and has an excellent export trade.

What the United States needs is a better acquaintance with the country. More Americans should visit both the East and West coasts. Such trade associations as the Rubber Club of America can help in this direction, and should give their support to increase trade between the United States and our Southern neighbors. The need is for direct cables. We should not be obliged to send our dispatches twice across the ocean. We should have American ships to take our goods there and bring our purchases back. We should have, as other nations do, legation buildings for our consuls, so they would not be obliged to hunt around for rents every time the landlord increases his price. The United States could build a legation building in every large capital in the world, for the price of one battleship. Were we to have all these requirements, inside of ten years the United States would control almost the entire trade of South America.

Colonel Kincaide was listened to with rapt attention, and at the conclusion he was given a round of applause.

President Hodgman then called upon Hency C. Pearson, of THE INDIA RUBBER WORLD, who had just returned from a trip in South America. He said that he had never been more fascinated with any travel story in his life than the one to which he had just listened. If his hearers were to go over the route with Colonel Kincaide they could hardly know more about it than had been given them so graphically this evening. Never before had the speaker seen put into such small compass the many facts of South America. We have been sending Americans there and they have come back and told us something about it, but they hadn't made any such full and accurate reports, nor half so interesting. One point the speaker made was that we Northerners are in some respects stronger in health and more direct in business. We show this in our dealings with them and they resent it. The Boston Chamber of Commerce sent down a courteous and tactful man, and the result is a great benefit for American commerce. We should send down there more such men in the future.

Mr. Pearson then spoke of the courtesy of the Boston Art Club in allowing the Rubber Club of America to hold its meeting and dinner on their premises and proposed a rising vote of thanks—which was heartily given. President Hodgman then read from a slip which had been handed him a report of the

capture of Vera Cruz, which had been telephoned from a newspaper office and after a few pertinent remarks declared the meeting closed.

This was one of the most successful and enjoyable meetings the club has ever held and one which will long be remembered by those who participated.

THE RUBBER CLUB WANTS FURTHER STATISTICS.

A FEW weeks ago the secretary of the Rubber Club sent a circular letter to the rubber manufacturers of the United States, asking them for certain statistical matter to be used in the formulation of accurate information about the industry, for the general benefit of all connected with it. He has received a great many replies, particularly from the larger manufacturers, but in order to make these statistics really accurate and valuable they should of course be complete; and as quite a number of manufacturers have as yet not sent in the desired information, the secretary has sent out a second letter, which is reproduced below:

To the Rubber Manufacturers of the United States:

The response to our circular letter of January 23 last, asking the rubber manufacturers of the United States to give us the number of their employees and the value of their total production during the year 1912 has been most satisfactory, many manufacturers evidently realizing the importance of having reliable statistics available in regard to the industry.

There are some firms who have not yet responded to this request, and in order that the statistics when compiled may be complete, we are sending out this second letter (with statistical blank enclosed) requesting that you will assist us in this work.

It is a fact that the statistics of the rubber industry have never before been compiled even by the United States Census Bureau, this industry having been classed in, to a great extent, with other affiliated industries. As a result the importance of the rubber trade has never properly appeared before the public. It was to supply this lack of accurate information that the Rubber Club of America has undertaken this work which our officers and Executive Committee regard as most important. We are very desirous of completing this work within the next month or so, and would ask that you give this letter your immediate attention.

One of the most serious problems that faces American rubber manufacturers today is unintelligent competition, which largely results from the lack of accurate information regarding exact conditions in the industry. People would not invest their money in industries where there is already a great over-production if they knew the facts, or if they had any way of learning the facts. Business is injured through this lack of information.

Kindly note that any information you may give will be absolutely confidential, as it will pass only into the hands of the Secretary of the Club who has no other connection with the rubber industry. The statistical blank bears a number so that your name will not appear on your report.

We trust this method will obviate any possible hesitancy on the part of manufacturers in furnishing these figures.

Upon request we will be pleased to furnish you with a copy of the statistics when compiled.

Very truly yours, RUBBER CLUB OF AMERICA,
April 8, 1914. H. S. Vorhis, Secretary.

RUBBER HEEL WITH BALATA PLUGS.

The advantage that balata has over the standard grades of rubber is its superior friction—its non-slipperiness—which makes it particularly adapted to use in belting. This same quality naturally suggests the use of balata in the making of rubber heels, and a San Francisco inventor has taken out a patent for a rubber heel with two plugs made of balata inserted at the back of the heel, which naturally touches the ground first. As there is not much resiliency in balata, this disadvantage is compensated by two cavities, one over each plug, between the layer of rubber and the leather and forming an air chamber.

THE RUBBER SUNDRIES MANUFACTURERS DINE.

THE annual social dinner of the Rubber Sundries Manufacturers' Association was held on April 9 at the Waldorf-Astoria, New York. Twenty-seven members and guests were present, and they sat around a large, round table handsomely decorated in red and green, chrysanthemums supplying the red and smilax the green. It was announced as a purely informal dinner, without oratory of any sort, and this promise was lived up to, as there was a noticeable absence of set addresses; but Mr. F. H. Jones, retiring vice-president, who acted as chairman for the evening—in the enforced absence of the president, Alexander M. Paul—made a few spontaneous remarks and then called upon Mr. Howard E. Raymond and Mr. George B. Hodgman, the chairman of the Entertainment Committee, for brief contributions suited to the occasion. Both responded in happy impromptu inspired by the time and place.

The distinctive entertainment of the evening—that is, apart from the social enjoyment of the dinner itself—was the very successful demonstration of Edison's wonderful new Kinetophone, which we have all been reading about for some time—for the great inventor has been working on it for some years—but which very few of us have seen—that is, in successful operation. This invention has now obviously reached a practically perfect stage, as was shown at this "Sundries" dinner, where the words were

of Parker, Holmes & Co., president, and Chas. J. Davol, of the Davol Rubber Co., vice president. E. E. Huber was re-elected secretary and treasurer, in which capacity he has served for many years.

NEW RUBBER IMPORTING HOUSE.

A new rubber importing company—Dunbar & Co.—was incorporated April 25, under the laws of the State of New York, with an authorized capital stock of \$200,000. The company has taken offices at 290 Broadway, New York, where it will deal in crude rubber and allied products.

The active members of the new organization are Frederick W. Dunbar and J. Frank Dunbar, both of whom have been well known to the trade for years. The former was connected with the New York Commercial Co., from 1892 until that concern went into liquidation last year. For several years he lived in Pará and managed the Brazilian end of the business, but more recently he has lived in New York, superintending the buying and selling of rubber for the New York Commercial Co. J. Frank Dunbar was for a number of years connected with A. H. Alden & Co., of Boston, and has long acted as treasurer of the Rubber Club of America.

It is the intention of the new concern to maintain a department of information for the benefit of customers, where they may at all times be informed as to market conditions.



ANNUAL DINNER OF THE RUBBER SUNDRIES MANUFACTURERS' ASSOCIATION.

so perfectly timed to the movement that the actors in the film pictures became to all intents and purposes living beings. Everyone was intensely interested, naturally, in this feature of the evening's entertainment, which lasted nearly an hour and included a number of short plays.

The officers elected for the current year are: Russell Parker,

BALATA BELTING MACHINERY MADE BY DAVID BRIDGE & CO.

The machinery for the manufacture of balata belting used in the plant of the Manheim Manufacturing & Belting Co., Manheim, Pennsylvania, was made by David Bridge & Co., Castleton, England, and was put in place under the personal supervision of John Bridge, a member of the firm.

The Editor's Book Table.

WHO'S WHO IN THE RUBBER WORLD. 1914. EDITED BY A. STAINES MANDERS. Published at the Exhibitor Office, 75, Chancery Lane, London, W.C. [Octavo, 186 pages, board covers. Price 7s. 6d.]

THERE are two points regarding any industry that an intelligent man with an inquiring mind wants to know about:

First, who's who in the industry; and second, what's what.

And of these two points the first is by far the more interesting. The book, "Who's Who in the Rubber World," just sent out from London, gives all this information as far as the great rubber industry is concerned. It is edited by A. Staines Manders, pretty well known to every rubber man by reason of the fact that he was organizing manager of the London shows held in 1908 and 1911, and also of the London Rubber Exposition, which will occur next June and July—not to mention the Rubber Exposition held in the Grand Central Palace in New York City in the fall of 1912. His association with these exhibition enterprises, covering the last six years, has brought him into contact with practically everyone of importance in every branch of the rubber industry, from Akron to the Philippines, or, if you prefer it aliteratively, from Boston to Borneo.

The first hundred pages of the book are devoted to short biographies of leading rubber men the world over, and as there are twelve or fifteen of these biographies to a page, it will be seen at a glance that Mr. Manders has included in this little book, in abbreviated form, the life story of not far from 1,400 or 1,500 rubber men. The rest of the book is given over to information regarding companies and firms and associations connected with the industry—all in classified form, each classification being arranged geographically, so that any desired information can be very readily found. The list of rubber associations occupies thirty pages. A number of these are planters' associations, and the names of the officers and committee members are given. In the case of rubber clubs with large memberships only the names of the officers are mentioned.

The feature of the book, however, that will undoubtedly attract the most attention and prove most interesting is the department devoted to personal biography. This enables anyone in the trade to get a great deal of information about associates and acquaintances whom he may have known for years and yet regarding whose history he has known but few details; and as a book of reference it goes without saying that "Who's Who" will prove most valuable.

INDIA RUBBER LABORATORY PRACTICE. BY W. A. CASPARI, B.Sc. (Viet.), Ph.D. (Jena), F.I.C. Illustrated. Macmillan & Co., Limited. [Octavo, 191 pages and index, cloth covers. Price 5s. net.]

TO chemists of general training who may be called upon to deal with india rubber in its various forms, "India Rubber Laboratory Practice," by W. A. Caspari, B. Sc., Ph. D., F. I. C., will be found a source of much specialized information on this subject, as it contains strictly practical descriptions of methods which have been practiced by the author in the course of the last ten years, and found to be satisfactory.

Unlike most works of its kind, this book contains but slight mention of the botany and theoretical chemistry of rubber, or of the production of raw material and the mechanical testing of manufactured rubber, the first chapter only being devoted to sources of production, the various forms in which the raw rubber is received by the manufacturer and analysis of the crude or washed product. Chapter 2, which covers 18 pages, contains 17 illustrations, with full descriptions, of the machinery and apparatus required in a well equipped rubber laboratory, as well as the method of their operation. These include washing and mixing mills, drying ovens, etc. Rubber diluents—factice, bitumens, pitches and resins; solid compounding materials—ac-

celerators, fillers, pigments (white, red, black and other), and miscellaneous accessories—naphtha, vulcanizing agents, oils, waxes and fabrics—their physical properties and individual analysis, are successively treated, these being followed by a description of processes for arriving at the specific gravity or density of various substances. Instruction is given for the analysis of manufactured rubber, organic, which it divides into three classes, viz.: Heat-cured goods and ebonite; cold-cured goods; doughs and solvents. Analysis of manufactured rubber, inorganic, is also described, with illustrations of the required apparatus. Gutta percha and balata, their source, analysis, etc., form the subject of chapter 9, which concludes the volume, an appendix containing 7 tables covering the analytical characteristics of crude rubber sorts, conversion of crude into washed rubber prices, etc.

In a review but brief mention can of course be made of the subjects treated, many of which in the book itself are gone into to the fullest possible extent, with no detail of importance omitted. The possibilities offered as a source of information and instruction in methods and practices employed by one familiar with the chemistry of rubber will no doubt, however, be suggested by this brief outline and commend the work to the favorable consideration of those less experienced in treatment of this important commercial article in laboratory practice.

THE TWO AMERICAS. BY GENERAL RAFAEL REYES, EX-PRESIDENT OF THE REPUBLIC OF COLOMBIA. Illustrated. Edited by Leopold Grahame. With 31 illustrations and photographs. New York: Frederick A. Stokes & Co. [Octavo, 324 pages, board covers. Price, \$2.50 net.]

NO one will be disposed to deny these two statements, viz.—that the great cynosure for the world's attention at the present time, and probably for some months to come, is the Panama Canal; and secondly, that the most marked material development of the present century will take place in South America. So it behooves every man who wishes to be familiar with great world events, and particularly every American business man—using the term "business" in a large way—to acquaint himself with the great republics to the south. And there is no way in which he can make a better start on this course of education than by reading the book "The Two Americas" by General Reyes, ex-president of the Republic of Colombia.

While the book is entitled "The Two Americas," very little attention is devoted to North America—and this is fortunate, as to all American readers at least North America is familiar ground. General Reyes has spent, at one time and another, both in private and in official capacity, much time in the United States, so that he knows the general way in which people of this country view the South Americans. He has found—speaking of the average citizen—an unfortunate ignorance in this country of South American history, conditions and development. That undoubtedly has been the case hitherto, but with the opening of the canal and the tremendous opportunities that will follow in its wake, no one can hereafter call himself well informed who does not have an approximately accurate idea of matters in the South.

Primarily, the writing of this book was evidently undertaken from a large sense of patriotism. While a Colombian, General Reyes is even more a South American. His sympathy embraces the entire continent, from Caracas to Magellan, and he has written this book not only to show to the people of South America what all other South Americans are like, but to show to the people of the world, and especially to those of North America, what South America really is.

We have here no "touch and go" description of travels, such as are ordinarily written by foreigners touring through a country and getting their information from car windows. General Reyes took an extended trip through Brazil, Uruguay, Argentina, Chile, Peru, Ecuador and Colombia. His position as an ex-president of one of the republics and his extensive acquaintance opened every door of information to him, and the fact that he had lived practically all his life in South America and had taken a prominent part in its affairs enabled him to view the conditions in all the different republics with an intelligent and sympathetic eye.

He devotes an interesting chapter to the Panama Canal, and while naturally he cannot entirely conceal a sense of grievance over the revolution that bereft Colombia of the isthmus—for this happened when he was president—he still can discuss this matter without any suggestion of rancor. He hopes that in the immediate future the United States Government will make due amends for the Colombian loss inflicted by the Panama revolution; but his feeling about the canal does not prevent him from speaking in eulogy of Mr. Roosevelt's recent utterances in South America. In fact he devotes ten pages of his concluding chapter to reproducing in part Mr. Roosevelt's address delivered last October in Rio de Janeiro.

To be sure there is very little said about rubber in this volume, but that should make it none the less interesting to rubber men, because one can no more conceive of South America without its great Amazon Valley than he can conceive of the United States without the great Mississippi system; and in the development of South America the Amazon must necessarily largely share—and that means the development of its rubber industry. It is quite true that at present the Eastern plantations are pushing the Amazonians rather hard, but it is unthinkable that this vast rubber territory planted by the hand of nature on the world's most wonderful waterway shall for any great length of time or to any considerable extent fall into disuse.

THE FUTURE OF TROPICAL AMERICA, THE TROPICAL EXPLOITATION SYNDICATE, Ltd., 28 Mincing Lane, London. [Paper, 92 pages, with 32 plates. Price, 1s. net.]

AMONG the immediate effects of the opening of the Panama Canal will be a demand for information regarding tropical America, its natural features and products, as well as the opportunities the new waterway will open to American import and export commerce. While the facts are to be found in bulky library volumes, what is wanted is a summary in convenient form of the leading points of interest, available for prompt reference.

Such a compilation is that recently issued by the above-named syndicate, which recognizes the fact that while two thousand years ago it was said that "all roads lead to Rome," tomorrow half the commercial roads of the world will lead through the Panama Canal.

The various countries of tropical America are classified in this work into four groups—Central America, East Coast of South America, West Coast of South America and the West Indies. Under the first group are: Panama, Costa Rica, Nicaragua, Republic of Honduras, Salvador, British Honduras and Guatemala. Yucatan (Mexico) is also included. In each case the products are described—cocoanuts, bananas, cacao, coffee and sugar being in most cases prominent.

Referring to rubber, the book contains this interesting paragraph: "Natural rubber grows wild in immense quantities in the forest-clad district of Darien, and a syndicate is already in operation in Darien producing rubber of excellent quality. In every part of Panama rubber is found, in particular the species called *Castilloa*, which thrives everywhere. At one time rubber was exported in quantity, but as the natives obtained it by the simple method of cutting down the trees, the more easily accessible plantations were gradually destroyed. To the individual or

company provided with sufficient capital there is doubtless here a prospect of good returns, but little can be done without expenditure and patience to await development of plantations."

In Nicaragua, rubber has greatly suffered through too frequent tapping by the natives, but in view of the steps taken by the government for the protection of the industry, a great development is anticipated. The supply of wild rubber in the Republic of Honduras is now becoming exhausted, while rubber planting is a comparatively modern industry in that country. In British Honduras rubber is receiving close attention and *Castilloa* is found wild. The Pará variety has been introduced and seems to flourish even more freely than the native species. Guatemala, having a climate tropical in the lowlands and temperate in the more elevated portions, can, it is remarked, grow with success various kinds of produce, including rubber.

The second group of tropical countries includes: Colombia, Venezuela, British, Dutch and French Guiana and Tropical Brazil. Among the points urged are the suitability of British Guiana for the cultivation of rubber and for the growth of balata, the supply of which is said to be inexhaustible. The importance of the Brazilian export of rubber is also commented upon.

Crossing the Continent, the third group is reached, consisting of Ecuador and Peru. With respect to the former country, the accessible rubber supply from wild trees is said to have almost ceased, attention being now paid to planting. In the concluding chapters of the work the general characteristics of cocoanuts, cocoa, coffee, limes, sugar, bananas and pineapples are dealt with.

Owing to the systematic classified arrangement of the information affecting the various products of the different countries treated, the work will be found of much value for reference, while the details of currency, weights and measures will be found equally useful.

The 32 illustrations bring out the principal features of the comprehensive subject treated.

LE CAOUTCHOUC; SA CHIMIE NOUVELLE; SES SYNTHESES. By A. Dubosc, Chemical Engineer, and A. Luttringer, Doctor of Sciences. Paris, 1914, A. D. Cillard. [Paper, 8vo, 606 pages.]

IN this comprehensive work the subject has been divided into three principal sections—the first dealing with the general question of natural rubber and the second with its formation and analysis, while the third and final division treats of its synthesis. Thus each section naturally leads up to the succeeding one. The object of the authors has been to group together the references before scattered through various publications, with the addition of their personal observations on the subjects embraced in the title.

After a review of the productive capacity of the various rubber-producing regions, with special reference to the plantations in Asia and Oceania, the question of resinous rubbers is dealt with, followed by a discussion of reclaimed rubber under various heads, as well as references to standard patents on processes. In the following section, the physical and chemical properties of crude rubber are discussed, as well as coagulation in its different forms. This discussion serves as an appropriate introduction to the third section, which is devoted to the various processes of rubber synthesis discovered in recent years by leading scientists.

In the concluding paragraphs of the work reference is made to the statement of Dr. Duisberg at New York in 1912, to the effect that tho the solution of the synthetic problem was very near, it had not been as yet definitely and practically discovered. The opinion of the authors of this work is summarized in the view that two solutions, both of industrial possibility, have been put forward—that of Dr. Hoffmann and Dr. Coutelle, of the Bayer Works, and that of the English group led by Messrs.

Perkin, Strange and Mathews. Cheap and abundant raw material is a point of the first importance in the production of synthetic rubber. Several raw materials are referred to as possible bases of future synthetic rubber, such as acetylene and carburet of calcium.

In the concluding words of the volume:

"As between the cup and the lip, there is room between the laboratory and the factory for some disappointments and for a good deal of work."

The book is a valuable contribution to rubber literature, particularly with reference to synthetic rubber.

NEW TRADE PUBLICATIONS.

"REACH 1914 BASEBALL" is the title of a catalog which has just been issued by the A. J. Reach Co., of Philadelphia, enumerating a very complete line of baseball supplies suitable for the 1914 season. Five pages of this thirty-two page booklet are devoted to baseballs, no less than 23 varieties of which—some with rubber centers, some with rubber surrounded cork centers, and one, the "Lively Flyer," made entirely of rubber—are described and illustrated. Twenty pages are occupied by mitts and gloves of styles appropriate for catchers, basemen, fielders, etc.; bats, masks and body protectors occupy two pages each, the final page and inside back cover showing bat and uniform bags, bases, plates of rubber, etc., score cards and shoe plates. It would seem practicable to select from this catalog any article required by any player, the illustrations, descriptions and prices being particularly clear.

The North British Rubber Co., Limited, Castle Mills, Edinburgh, has just sent this office a most attractive booklet, the 16 pages of which are devoted to description and reproductions in colors of various designs in rubber floor tiling as made by this company, also mentioning rubber mats, stair treads, etc. The colored photographs represent tiling as laid in offices of insurance companies, banks, mercantile houses and on decks of steamships, tho its suitability for use in other places—such as hospitals, churches, public offices, libraries, etc.—is apparent.

The Acme Rubber Manufacturing Co., of Trenton, New Jersey, has distributed among the trade a booklet of 16 pages descriptive of Acme Red Letter tires, and containing prices, etc. Every tire put out by this company bears the name of the company, a serial number and the brand "Acme" in large red letters, and tires from which these marks have not been effaced are guaranteed, the nature of the guarantee being described on page 13 of this booklet. Red letter tires are hand made with wrapped tread and given single cure in open steam, while Acme Red Letter inner tubes are described as being made extra heavy and united by a special process so that slow leaks cannot develop at the splice. These tires are made plain tread, dimple tread—anti skid and Hemisphere tread—anti skid. Schedules of weight and inflation and of interchangeable sizes are given, also advice to tire users and telegraphic code. The booklet also contains description and price list of Acme inner liners. It has 7 illustrations, including a photograph of the company's plant at Trenton.

A four-page folder of newspaper size is being sent out by the Firestone Tire & Rubber Co. to its dealers all over the country, and largely in their interest. It contains numerous suggestions which, if properly followed out by the dealers, would probably result in greatly increased sales. The inside pages show proofs of electrotypes in various sizes ready for the dealers' use in their local papers, space being left in each case for the insertion of the dealer's name in type. The last page shows special electrotypes, etchings or halftones, illustrating various types of tires, tubes, repair apparatus, etc. Each folder is accompanied by a postal card

for use by the dealer in sending in his order for cuts, which are furnished absolutely free and delivered all charges prepaid.

MOTOR TRUCKS OF AMERICA.

On account of the enthusiastic reception accorded last year to the first volume of "Motor Trucks of America," the B. F. Goodrich Co., of Akron, has been encouraged to make the issue a yearly one. Volume 2 has accordingly been published and contains a wealth of information about more than ninety motor trucks built in the United States; thus placing full and accurate details at the disposal of prospective buyers. The illustrations are in the highest style of execution, while the specifications include in most cases the Goodrich tires, either as regular or optional equipment.

With the details given the customer can appreciate how each car looks and what it claims to do. Motor truck buyers require such data about motor transportation as will enable them to select the right truck for their particular service, and thus get the best results from their investment; their aim being to obtain the largest amount of productive time per unit of machinery.

Comparison of details is the surest way to obtain satisfaction and this has been abundantly provided for by "Motor Trucks of America." The Goodrich company, Akron, will be glad to send a copy of the second volume, on receipt of a request to that effect on the letter head of the prospective truck buyer.

TRUCK STANDARDS IN CARD FORM.

Sets of cards showing standards of commercial vehicles recommended in 1912 by the National Association of Automobile Manufacturers are being mailed to all manufacturers of commercial vehicles by the National Automobile Chamber of Commerce, successor to the above-named association and to the Automobile Board of Trade. These seven cards, 8 x 10, are arranged for filing or distribution and include warranties, in form approved December 3, 1913, superseding the motor truck warranty recommended by the N. A. A. M., in 1912, which it combines with the standard passenger car warranty adopted in 1910. The tables are accompanied by charts of curves and by half-tone engravings illustrating the new lithographed standard warranty.

The subjects of the cards are as follows:

Standard Warranty, Standard Speed Rating, Standard Body Weight Allowance, Overload Allowance Resolution, Standard Caution Plate, Standard Frame Widths, and Lengths and Standard Demonstration Charges.

To encourage the adoption of these standards, the National Automobile Chamber of Commerce is sending sets of the cards to all companies on its list of active manufacturers of commercial vehicles.

Requests from those makers who have not received cards should be addressed to Secretary, Commercial Vehicle Committee, National Automobile Chamber of Commerce, 7 East Forty-second street, New York City.

PROTECTION FOR THE EAR AGAINST NOISES.

On page 581 of the August, 1913, number of THE INDIA RUBBER WORLD, mention was made of an invention composed of a



celluloid tube with rubber discs to prevent impairment of the sense of hearing through shock from gunfire or other loud noises. No adequate illustration of the device being at that time available, and believing that such an illustration might be of interest to our readers, we reproduce herewith a drawing which shows the protector in use. [J. A. R. Elliott, New York.]

THE RUBBER TRADE IN AKRON.

YOUR correspondent wishes to make a correction. In his last letter, published in the April issue of THE INDIA RUBBER WORLD, he stated that W. E. Slabaugh had been appointed trustee in bankruptcy of the Akron Rubber Mold & Machine Co. This was an error. He should have said that Mr. Slabaugh had been appointed trustee of the Rubber City Machine Co., which is quite another concern. The Akron Rubber Mold & Machine Co. is sound financially and is doing a very large business, both in the United States and Canada. It has recently purchased land adjacent to its present plant, for the erection of a substantial addition, which will increase its ground floor space from 70 x 132 feet to 70 x 232 feet. The plant at the present time is running 24 hours a day.

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The Birmingham Iron Foundry, of Derby, Connecticut, the well known builders of "Birmingham" Rubber Mill Machinery, have purchased the equipment of the Rubber City Machine Co., Cedar street and Broadway, Akron, Ohio, and will operate the plant as a branch. P. E. Welton, favorably known in the rubber trade, has been retained as manager of this branch and will also represent the company's business from the home office in Akron and the Western territory generally.

Automatic mixing aprons, duplex cores and other rubber mill apparatus of the lighter kind will be manufactured here; also general machine jobbing will be done, so far as the shop is available for that purpose. As the company has installed large equipments in the rubber factories in Akron, it is intended to also use the branch as a "service station" where repairs and adjustments may be made at short notice on any of the "Birmingham" products.

Every man, woman and child—white, black, brown, yellow and red—of the United States, gets an average tire service of Akron-made tires of two miles per month. Every man, woman and child of the world gets an average tire service of Akron-made tires of two miles per year. Akron's tire factories are running two and three shifts, many more tire making machines are humming than ever before, all to take care of the enormous tire demands. Akron's factories turn out more than 25,000 tires per day, more than 600,000 for the month of April. Akron's April tires placed side by side and running at the rate of the fastest automobile would cover every inch of soil in the United States in a month. Akron's April, May and June tires, standing circumference to circumference would reach from New York to Chicago. The canvas used in Akron's rubber factories in one year would place the walls of a tent all around the State of Ohio. If Akron used only plantation rubber it would take almost the world's supply to take care of her rubber trade. Approximately 30,000 persons in and about Akron are directly engaged in Akron's rubber business, and an equal number outside of Akron are engaged in making or raising raw materials that go into Akron's rubber goods. At least 10,000 people, scattered all over the world, are either interested in buying or selling Akron rubber products or products for the Akron rubber factories. Yet we are told that "the rubber industry is in its infancy."

* * *

Notice in the New York papers was recently made of a new process for manufacturing rubber by The B. F. Goodrich Co. The writer inquired of Mr. Shaw concerning the same. Mr. Shaw's answer was "Nothing for publication."

Goodrich Resilient Wireless Tires, description and illustration of which appeared on page 316 of our March issue, have been adopted for use on G. V. Electric trucks by the National Electric Lamp Association in Cleveland, Ohio, to carry Mazda bulbs, and are said to be giving more than the average mileage in this service in addition to effecting a saving in power, it being found necessary to charge the batteries only every other night instead of every night as before these tires were used.

The Akron letter for the April issue of THE INDIA RUBBER WORLD contained mention of the appointment of W. O. Rutherford, whose portrait appears here, to the office of assistant general sales manager of The B. F. Goodrich Co. Mr. Rutherford has a wide acquaintance in the trade, having been manager of



W. O. RUTHERFORD

the Denver branch of this company and later, for a period of ten years, of the Buffalo branch. For the past four years he has acted as assistant to H. E. Raymond, second vice-president and general sales manager, and this appointment marks another important advance in a career of efficiency.

The new machinery which the Firestone Tire & Rubber Co. has installed in the additions to its plant recently completed is already running at full capacity, bringing the company's daily output of automobile tires up to 6,000.

The Gramm motor truck sent to St. Petersburg to compete with foreign made motor equipment for use in the war service of that country was equipped with Firestone tires, and as a result of especially severe tests it was purchased by the Russian Government, which has since repeated its orders.

What is probably a world's record in tire building is reported as having been made on April 6 by the Goodyear Tire & Rubber Co., when the factory output comprised 10,635 tires.

Commencing April 1 this company discontinued its retail business in tires of all kinds, the various branches throughout the country after that date to distribute only in wholesale quantities.

The Kelly-Springfield Tire Co. is rapidly pushing the construction of four new buildings.

* * *

The Marathon Tire & Rubber Co. has more than doubled its floor space and output during the last twelve months.

The Betzler & Wilson Fountain Pen Co., of this city, have purchased the complete fountain pen plant formerly operated by O. E. Weidlich, Cincinnati, Ohio, and moved it to Akron, combining it with their present factory.

The Betzler & Wilson concern has been in business for the past

twenty-two years and manufactures a full line of fountain pens—ordinary, non-leakable and self-filling—and has recently also increased its capital and expects to advertise and push the line stronger than heretofore.

* * *

H. A. Hine, secretary and treasurer of the Star Rubber Co., of Akron, died March 28, as a result of an operation the day before for appendicitis. Mr. Hine was born in Ohio in 1864, and in 1890 became a resident of Akron. He first intended to enter the profession of law, but he soon left his legal studies to become a bookkeeper in the Star Drilling Machine Co., with which organization he was associated for twenty-three years, for the last fourteen years being its secretary and treasurer. He was also connected with a number of other Akron enterprises and was prominent as a Mason and in other similar social organizations. His wife and two daughters, of 14 and 12, survive him.

* * *

The various officials and owners of the Akron rubber companies have taken a live interest in the raising of funds for a new hospital for the city of Akron, which will probably be located in the south end of the city, not far from several large rubber plants. The Kelly-Springfield Tire Co. has subscribed the sum of \$5,000 toward this enterprise, the first payment of \$500 to be made at the time work is started on the building, and an equal amount on the same date each year thereafter for a period of ten years; and a subscription of \$6,300 has been made by executive heads of the Firestone company.

* * *

The Mohawk Rubber Co. has changed its New York offices from 1864 Broadway to 123 West Sixty-eighth street, the quarters formerly occupied by the Century store, thus securing a much larger floor space.

* * *

A number of men who for some time past have been prominent in the rubber industry of this city have become identified with the interests of the Norwalk Tire & Rubber Co., of Connecticut, mention of whom and of the incorporation and plans of the new company is made on another page of this issue.

The Firestone Tire & Rubber Co. has appointed J. Jordan office manager of its New York branch, succeeding J. S. Ridley, who assumes the management of the new branch at Newark, New Jersey. Mr. Jordan is well acquainted with the New York tire trade, having been in this field for the past nine years, first as assistant office manager of a large rubber company and of late with the Century Tire Co.

R. M. Merriman has associated himself with The Columbia Rubber Co., of Columbiana County, Ohio.

J. W. Miller, secretary, treasurer and superintendent of the Star Drilling Machine Co., has been elected secretary and treasurer of the Star Rubber Co., to succeed Homer A. Hine, lately deceased.

Emil Gammeter, of the Electric Reclaiming Co. and the Gammeter-Brodbeck Sales Agency, has just completed an extensive trip through Europe in the interests of these two companies.

T. S. Barbour has become associated with the sales department of the Firestone Tire & Rubber Co. at its branch in Omaha, Nebraska.

E. D. Whorley has been appointed general manager of the American Tire & Rubber Co.

R. M. Pillmore, president of the Mohawk Rubber Co., who has spent the winter in California advancing the interests of that company, is expected in Akron next week.

John Johnson has been appointed general manager of the Electric Rubber Reclaiming Co. plant.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent

THE rubber trade is spotty. Some lines are having good business, others are slow. And some houses in similar lines report dissimilar conditions. However, in the main, most people are seasonably busy. The tire men are plugging along, some reporting good business, others not, but all willing to produce stock goods in anticipation of heavy demand later.

The rubber footwear business is over for the season, as far as the consumer is concerned. This is about the time when formerly salesmen were taking good orders under the old system of discount for early business, but now that no such inducement is held out, salesmen find it difficult to interest customers. Therefore jobbers are hanging back, and the mills are running to very small tickets, and mainly on floor goods and tennis shoes. The rubber clothing men are fully as busy as usual at this season. The druggist sundry people are having a normal trade. There is a moderate call for mechanicals. Those factories where rubber heels and soles are made are doing a rushing business with orders ahead.

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This tendency to use rubber as a substitute for leather in the shoe industry is shown in the formation of another company to manufacture a shoe sole by combining leather scrap, finely shredded, with rubber. The C. & S. Co. is a new corporation with a capital stock of \$50,000, which is building a new machine to manufacture such soles. The officers are prominent men in Brockton, the leading shoe center of Massachusetts for men's shoe manufacture. Harvey F. Crawford is the president, and the other officers are Herbert F. Bryant, vice-president; Francis E. Shaw, treasurer; and Ernest L. Shaw, clerk; and these, with E. M. Low, are the directors.

Another Brockton enterprise, though it may not yet be beyond the experimental stage, is the making of soles of a combination of duck fabric and rubber, several alternate layers of each being compressed and vulcanized, forming a sole which is said to be much more flexible than leather, and to give far longer wear.

Speaking of the latter fact, probably few are aware of the extent to which rubber is taking the place of sole leather. There is an economic side to this. Sole leather is higher in price today than ever before in the history of the shoe trade. Cattle are diminishing in number, hides are scarcer and as a consequence the shoe manufacturers are welcoming any material which can be properly and economically substituted. Rubber soles have been used for years on certain lines of sporting and outing shoes, but within the last two years their use has increased enormously, and such soles have been made to the number of millions of pairs. A Brockton shoe manufacturer has succeeded in making a strong, sensible, handsome shoe without a single particle of leather in it, but this was more as a curiosity than a business proposition, though a Chicago house has already asked for samples and prices. In this connection the manufacturer claimed to be the first user of rubber for a welt, but this is disputed by the makers of leather-soled rubber boots, which have a rubber welt to which the leather sole is attached.

* * *

The news of the death of John H. Forsyth came as a distinct shock to his many friends. Although he had not been in active business for some time, he still kept in touch with affairs and was seemingly in fairly good shape. He was much interested in the erection of the Forsyth Dental Infirmary, now nearing completion, which is a gift to the needy of this city, he with his brother, Thomas A. Forsyth, being the donors, having erected it as a memorial to two brothers, James Bennett Forsyth and George Henry Forsyth. He had hoped to see this novel benefaction completed and turned over to the trustees for the purpose intended. The funeral was attended by many friends. During the services work was stopped at the Infirmary building, and also

at the factory of the Boston Belting Co., of which he was for years the superintendent.

* * *

Thomas A. Forsyth, of the Boston Belting Co., has been offered the office of Overseer of the Poor of the City of Boston, by Mayor Curley. Mr. Forsyth is a man of keen business ability, and his charitable disposition is evinced by the building of the great dental infirmary, mentioned above. I have not yet heard that Mr. Forsyth has accepted this important office, but its tender to him cannot but be considered an honor to him and an excellent choice by the Mayor.

* * *

If the price of scrap rubber declines on account of an oversupply, the girls of Wellesley College may be blamed for it. This world-renowned college sustained a tremendous loss when its principal dormitory and recitation building was totally destroyed by fire last month. Extraordinary efforts are being made to raise money for a series of buildings to replace College Hall, and one of the schemes, started by Miss Mary Knapp, of Pittsburgh, Pa., is the collection of scrap rubber. Every girl in the college has been asked to save her cast-off rubbers, and to have her eyes open to the state of her friends' overshoes. It is expected that the girls will appeal to the students of the men's colleges to aid them in this campaign, and thus will be gathered a large amount of scrap rubber. The girls will also examine the tires of all automobiles in which they are invited to ride, and will also be on the lookout for all the leaky hose which may be discovered when the spring gardening season starts. The result is expected to be a large collection of scrap rubber which, even at present low market rates, will add a goodly sum to the building fund of the college.

* * *

Boston is likely to have a new rubber footwear centre if the present development continues. Boston is somewhat notional as regards its business section, and to say that a firm has moved to South Boston means to a citizen that it has gone into the suburbs. This, however, is not necessarily the case, for the three houses which have recently moved from Congress street and from Atlantic avenue are certainly no farther, and possibly not as far, from the big South Terminal Station as they were before. The three concerns are all in the same block, two in adjoining stores and the other but a few doors from them.

The Pilgrim Shoe and Rubber Co., which is a jobbing outlet for the Hood Rubber Co.'s goods in parts of New England, is to occupy the store, 274 and 276 Summer street, or, as it is sometimes called, Summer Street Extension. It is a five-story building, with elevators and specially convenient shipping facilities.

At 278 Summer street a similar building is being furnished and equipped for the occupancy of the Congress Shoe and Rubber Co., which sells at wholesale the Shawmut rubbers, also made by the Hood Rubber Co., and whose territory includes all of New England and part of New York for this line. The two houses naturally are closely connected, though one caters more to the city trade and the other to the smaller dealers. They cannot be considered competitors, and, in fact, the offices, which adjoin each other, are connected by doors leading from one to the other. However, the two organizations have separate officers, Julius Weber being president and treasurer, and W. S. Cruickshank general manager of the Pilgrim Shoe and Rubber Co.; and Marshall Cutting being treasurer and general manager of the Congress Shoe and Rubber Co. William A. Moody, until recently president of the latter company, has resigned, and at present writing his successor has not been appointed.

W. F. Mayo & Co., wholesalers in rubber footwear, are at 286-290 Summer street, where they occupy the big six-story and basement building, which is exceptionally well fitted for their extensive business. For more than a quarter century they were

on Congress street, and the change to a new modern, mill-construction building is a great improvement in the comfort of all the officers and workmen, and tends greatly to added efficiency in the conduct of the business.

* * *

William H. Porter, who has been chosen president, treasurer and general manager of the Enterprise Rubber Co., assumed these positions the first of last month, and Mr. Proctor, his predecessor, has gone to New York, where he assumes important duties with the United States Rubber Co. Mr. Porter comes here from Pittsburgh, where for four years he had managed the Pittsburgh Rubber Co. business; but he is an old Bostonian, having been for fifteen years previous with the old firm of Edmands & Mayo and its successors, W. F. Mayo & Co., with whom he occupied various positions in the store and on the road. He is pleased to get back to Boston, and his old friends and neighbors are glad to welcome him here.

* * *

The steamer which took the Boston Opera company to Europe also carried as passengers Mr. Clarence L. Weaver, president and manager of the Banigan Rubber Co., of this city, and Mrs. Weaver, who are now on a vacation tour of Great Britain and the Continent.

* * *

That was quite a shipment of tires which arrived last month from the B. F. Goodrich Co., of Akron, for its New England agency. Twenty-five carloads means a good many tires, but Manager F. T. Moore believes the stock is none too large to satisfy the demands of automobilists served from this Boston branch of the house.

* * *

The Stoughton Rubber Co., at whose plant in Stoughton, Massachusetts, about 500 persons are employed, is erecting another addition, two small buildings having been moved to make room for the new structure, which will be 50 feet in length and three stories high. The completion of this addition will make it possible for the work of production to proceed from start to finish without covering any of the ground twice.

E. H. Hicks, vice-president of this company, will sail on the 12th of May for a trip through the British Isles and Germany (with perhaps a few days in "Gay Paree") on business connected with the company.

* * *

M. A. Turner, of the Monatiquot Rubber Works Co., of South Braintree, has just returned from a fishing trip in Maine. He reports that there are still enough fish remaining to supply all the other members of the rubber trade.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

THE arrival of spring has, of course, materially stimulated the sale of garden hose, and dealers in this particular article are at present quite cheerful. The footwear dealers are much less inclined to complain than during the fall and early winter. The snows of February and March and the rains of April have made a notable decrease in the stock of rubber boots and shoes carried on their shelves.

The belting people are also comfortably busy, especially those supplying the elevators in the northwest. Clothing dealers are as a rule not altogether cheerful, their business hardly being up to normal.

* * *

George F. Hawkinson, of the Peerless Rubber Manufacturing Co., gave your correspondent some interesting information regarding a feature recently introduced by his company for the increase of the efficiency of the selling staff. He said:

"Through your columns I should like to call the attention

of the rubber trade to a plan which has worked out most successfully with us, and which I believe could be tried by other concerns with equally gratifying results. Last February a meeting of all the salesmen, both in the city and on the road, who represented our company, was held at the Hotel La Salle. This meeting was so successful that it was decided at that time to repeat it quarterly. We are now preparing for our May meeting, which promises to be an even greater success than the former one. The plan of these meetings is not merely to get together and eat in a social manner, altho that is one of the most pleasant features. The purpose is for a general discussion of the many problems which beset the rubber salesman in his daily work. The individual experiences of each member can be told, and advice and suggestions offered by the others which could be secured in no other manner. Best of all, however, is the opportunity which is given for mutual encouragement among the salesmen. The social feature is important, but it is subordinate to the business purpose. We have every intention of continuing these meetings, as they are without question productive of much good, for the salesmen as well as for the firm."

* * *

One of the most seasonable articles of footwear in the Chicago market is the tango slipper. This was introduced a short time after it was seen that the tango was slated for popular favor. Thousands of pairs have been sold in the city during the winter. Few dances are held where the tango does not rule, and many are given where no other dance is danced during the entire course of the evening.

* * *

The Chicago branch of the Motz Tire & Rubber Co., of Akron, has moved from its former location, 2023 Michigan avenue, to its new quarters at 115 East Thirtieth street. This change was necessitated by the rapid expansion of the Chicago organization, which had entirely out-grown its former facilities.

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Mr. Ryerson, vice-president of the W. D. Allen Manufacturing Co., is now on a visit in the East, in the interest of the company. He reports business booming, especially in the fire hose rack equipment for interior protection.

* * *

George McChesney Syther, manager of the service department of the United States Rubber Co. in this city, died on March 30 of heart trouble, at the age of thirty-four years. Mr. Syther came to Chicago from Akron, where he was employed by the Goodrich company. He is survived by his wife and two small children. His body was taken to Akron for interment.

USING CANDY MOLDS OF RUBBER.

By Our Cincinnati Correspondent.

DOWN at the Woodward High School, in Cincinnati (ex-President Taft's *alma mater*, by the way), an inventive teacher in domestic science has contrived an interesting device for candy-making, which, being non-patented, lends itself to imitation elsewhere.

While the course of domestic science is, of course, intended to help the young women of the Queen City to become better able to wash and iron and cook and bake, still it is recalled that husbands and children relish a tid-bit now and then. As a result candy-making has become a feature of this course and the young women make caramels and marshmallows and taffy and what not.

Candy is candy the world over, of course, but appearances count a great deal. To pile up a lot of lumps of sweets would not always serve to tempt the palate of the fastidious. Where-

fore good confectioners make models of metal, which, in turn, are pressed into flat beds of cornstarch or flour, making molds for the candy itself. Into these molds the melted sugar is poured and left to cool. Often, however, in pressing these metal shapes into the cornstarch or flour one mold will dis-



SCHOOL GIRLS MAKING CANDY IN RUBBER MOLDS.

turb another, so that the whole work has to be done over again. But this would not be the case with a rubber mold that would always keep its shape and not be so liable to accidents as the unstable starch or the shifting flour.

So the teacher got busy. She designed some eighty different forms in which candies would look well. These, then, she arranged in series, eight rows across by ten rows down. She took her pattern to a great rubber factory and had a mat of rubber embodying this series of forms made for her use.

And now candy-making is indeed simple. You pour your syrup into the neat rubber molds, let it cool and by and by draw it out; and a slight washing, with luke warm water, makes the mold ready for another batch of the sweets.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

SOME of the rubber factories in this vicinity are booming, altho others report a slight falling off in the volume of business as compared with a month ago. Those concerns that are making automobile tires and automobile accessories of all kinds have enough orders on hand, it is reported, to keep them running full time for the remainder of the summer and well into the fall. The factories engaged in the manufacture of footwear, excepting such departments as are producing tennis and summer wear shoes, are not especially rushed at present.

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With the idea of electrifying the entire plant and practically doubling the floor space, the Phillips Insulated Wire Co., of Pawtucket, is having specifications and plans completed for a three-story and basement brick building, 300 feet long and 210 feet wide, with power house, to be erected on Freeman street and Mendon avenue, directly opposite the present plant. In anticipation of the change a number of small buildings at present located on the site are being removed and a large, new storehouse is in course of construction.

The latter building will be used as a general storehouse and will be of brick, 200 feet long and 80 feet wide, being a great improvement over the former buildings used for the purpose. The factory at present is being operated by steam power, but when the new power house is completed the entire plant will be operated by electricity, plans having been made for the installa-

tion of eight 300 h. p. boilers and two 1,000 k. w. General Electric motors.

The main structure of the new plant will be triangular shaped, 300 feet long and 210 feet wide at the north end and tapering down to about 60 feet at the south side. The boiler house will occupy the space between the main building and the junction of Freeman street and Mendon avenue. About 400 hands are employed by the concern at the present time, but when the addition is completed it is expected about 200 more will be required.

* * *

The manufacture of tennis shoes by the National India Rubber Co. is rapidly increasing, and prospects point to a busy time for a number of weeks to come. The rush is such at this factory that Assistant Superintendent James W. Franklin has posted a call for additional help in the stitching room, where the tops are made.

A baseball team has been organized by the employes of this company, under the management of C. E. Ostby.

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A new smokestack, 7 feet 10 inches in diameter and 150 feet high, is being erected at the plant of the Revere Rubber Co., on Valley street. It is to be of steel and will take care of two new boilers that are being installed at the plant. The mechanical force of the concern is doing the greater part of the work of erection.

The Revere company is rushed with work and is hiring additional help. At present the factory is turning out 1,000 tires per day, and 2,500 inner tubes. About 1,500 casings will also be turned out soon, according to the statement of the management.

Arthur Carr, superintendent of the company's rubber thread department, recently sailed for Europe. He intends to combine business with pleasure, and during his absence will make a thorough investigation of business conditions in the thread line for the company in England, Germany, Spain and Russia.

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The foremen and heads of the departments at the American Electrical Works and Washburn Wire Co., at Phillipsdale, have been organized during the past month for the purpose of promoting efficiency in the two plants, and of giving the men an opportunity to meet and talk over matters concerning the business. The first meeting was held early the past month, and while the two plants are controlled by the same interests the meetings are held separately. Superintendent Herbert Bessom of the Electrical works presided at one gathering and Superintendent Thomas Wray of the Washburn company at the other. It is planned to hold meetings every Saturday, and each week some timely topic will be taken up for discussion, and social features will be introduced.

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The Polack Tyre & Rubber Co. has opened an office at 17 Exchange street, with D. C. Fowler as district manager.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent

ONE of the most notable recent occurrences in Trenton was the "Pullen" demonstration on April 4, when the municipal authorities, the business men of the city, the automobile club and others united in a celebration to mark the victory of Edwin Pullen and the Mercer car in the prize race at Santa Monica. Trenton, which has been first in the production of many articles of commerce, is the home of the Mercer car, the first American car to win in a race of this kind. The demonstration took the form of an automobile parade, which included touring cars, runabouts, commercial trucks and motorcycles; suitable prizes—among which were automobile tires—being awarded for the best decorations. The parade ended at city hall, where Pullen and Andrew Vollman, mechanic of the winning car, were received

by the Mayor and presented with gold watches of Trenton make, gifts of the Citizens Committee of Trenton, and appropriately inscribed.

* * *

The factories of this state have had a particularly busy year. Of the 2,556 establishments in the state reported on by the State Bureau of Statistics, six declined to report as to capital. The working capital for the industries included in the report amounted to \$919,000,000. The largest amount invested in any one industry is given as \$74,000,000, in oils; while \$31,000,000 is invested in the rubber industry and \$43,000,000 in chemicals. The selling value of rubber products for the year 1913 is given as \$38,500,000, of chemicals \$44,800,000 and of wire \$41,000,000. The industries of the state as a whole were operated to 74 per cent. of their capacity, as against 73 per cent. for the previous year.

* * *

New Jersey will be the first of the states to complete its portion of the proposed Lincoln Highway, and a bill now in the hands of the Highway Committee of the Assembly provides for the making of the route at the expense of the state. The route, which passes through Princeton, will enter Trenton at the Battle Monument.

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A company was incorporated in this state on April 15 with an authorized capital stock of \$125,000, under the name of the Atlantic Aerial Navigation Co., which has as its object the designing, building, sale, repair, operation, etc., of aeronautical, automobile and electrical accessories and appliances, with devices of every kind and description therefor as well as all supplies, materials and other paraphernalia as are used or are capable of being used in their construction and operation. It is said that this company intends to operate an airship line of dirigible balloons and airships between the cities of the United States and foreign countries for the transportation of passengers, freight and express. The incorporators are Kenneth and Donald Robertson and James McCutcheon, all of 203 Federal street, Camden.

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The Fisk & Dunham Rubber Co., recently organized, with offices at 310 American Mechanic Building, is putting out a new style of inner tube, which, it is claimed, will stand up under the most exhaustive tests. It is a tube in which a specially prepared canvas is used and which, while heavier than the ordinary tube, is said to have abundance of life and not to deaden the tire. It is the invention of Clark F. Fisk, a member of the company. This company is now represented in the principal cities of the East, the expectation being to extend representation throughout the West as soon as the Eastern trade is well established.

* * *

The tire product of the Ajax-Grieb Rubber Co., of this city, is distributed locally and in Mercer county through the DeBlois Tire & Rubber Co., of which Ulric DeBlois is general manager. Mr. DeBlois is thoroughly familiar with the merits of this tire, having been for eight years tire inspector for the Ajax company.

* * *

A noteworthy instance of quick development is shown by the Cut Price Auto Tire Co., located at 112 East Hanover street. This concern, started in June, 1912, with a stock of 30 tires, has grown rapidly, its sales now embracing tires and accessories of all kinds, in a territory extending for twenty-five miles, within which distance deliveries are made, an automobile delivery service having recently been installed to assist in the further promotion of trade.

* * *

William R. Thropp & Sons, manufacturers of rubber mill machinery, have installed in their machine plant on East State street the largest roller grinding machine in the state. This machine weighs 20 tons, is 42 feet long, 12 feet wide and 5 feet

6 inches high, is capable of grinding a roll 24 inches in diameter and 144 inches long, and is driven by an attached electric motor. It is said that the accuracy of this machine is invaluable to owners of rubber mills, as it will grind out a roll that will not vary more than one-fifth of a thousandth part of an inch. This company employs 165 men and is working overtime.

* * *

The Luzerne Rubber Co., the productive capacity of whose plant here has for some time past been considerably over-taxed, is soon to erect a factory addition. This new building will be 80 x 40 feet, two stories high, and will be used as an addition to the mill and store rooms, increasing the capacity of the former to double its present output.

* * *

The up-keep contest started about a year ago by the Ajax-Grieb Rubber Co., of this city, has just been closed and prizes awarded to the successful competitors—208 in number—among whom \$5,000 has been divided, in amounts ranging from \$500 downward. Blanks provided by the company at the time the offer was made were used for reporting the size of the tire, the make of car on which it was to be used, the date of purchase, the speedometer reading and where the tire was purchased—this card being signed by the employer of the chauffeur and the information copied on cards at the place where the tire was bought. It was also required that notification be made when the tire had ceased its usefulness, the date when it was removed from the car, the speedometer reading and the number of miles covered by the car—this card also to be signed by the owner and returned within five days after the tire was taken out of service. Some remarkable tire mileages were obtained in this competition, the largest—16,782 miles—having been secured by C. E. Rock, driver for J. F. Gibney, Marlboro, Massachusetts, operating a Locomobile. This is the first time that such a contest has been tried by any tire concern, and the competition as viewed by the makers of Ajax tires shows that while service and long wear are built into every casing, it is care and attention to the tires that bring out the mileage, and abuse and neglect that spoil the chances of realizing the maximum. Another contest of a similar nature is soon to be opened.

* * *

The Olden Rubber Manufacturing Co., of 680 Olden avenue, this city, is erecting a new plant on the site of the one destroyed by fire on January 26. This company manufactures molded rubber goods, matting, automobile accessories, plumbers' supplies, etc., an increased production of which will be made possible by the present building operations. The factory will be of brick, steel construction, on a plot 160 x 102 feet, the main mill room covering an area of 125 x 102 feet and having but seven pillars in this entire space. A large quantity of new machinery has been purchased, and the prospects are that this will be in full operation by June 1. D. M. Lovett, manager, states that sufficient business is in prospect to keep the plant running full time, and that there is every indication of satisfactory and successful operation the same as before the fire.

* * *

The Semple Rubber Co., recently formed in this city, with a capital stock of \$125,000, has taken the plant on Murray street formerly occupied by the American Porcelain Works, which it is equipping for the production of inner tubes for automobile tires, to the extent of 600 tubes daily, the expectation being to extend the line of manufacture a little later to include outer cases and other lines of a kindred nature. This plant is on the Belvidere division of the Pennsylvania Railroad, and will soon be ready for occupation. Charles H. Semple, at one time president of the G. & J. Tire Co., of Indianapolis, and who about two years ago retired from the presidency of the Empire Tire Co., of this city, is president of the new concern; F. A. Drake is treasurer, and R. H. Laporte is secretary.

THE RUBBER TRADE ON THE PACIFIC COAST.

Continued from page 127

THE Employers' Liability law recently enacted in California, if enforced in accordance with the original intention, will probably add slightly to the cost of production in this state. The general recourse of employers in their efforts to evade this law has thus far been to deduct the cost of the insurance from the wages of their employees—a practice declared by the State Industrial Commission to be entirely contrary to the spirit of the Compensation Act, if not to the letter of the law, which especially specifies that any agreement between employers and employees for the payment of sick, accident or death benefits must be "in addition to the compensation provided for by this act." The commission also points out that by carrying the amount of the premium into the cost of production the burden is borne by the consumers, who are chiefly employees, and that if they are also assessed directly, in reduction of wages, they are doubly taxed. The theory of compensation is to transfer the burden from the injured to the industry, which cannot be accomplished if employers are permitted to assess the employed, some particularly unscrupulous ones even going to the extent of assessing their workers beyond the total amount of insurance.

* * *

The Diamond Rubber Co. has appointed W. J. Voit, former manager of its Los Angeles branch, to the position of Pacific Coast manager recently vacated by C. E. Mathewson. Mr. Voit, whose headquarters will be at San Francisco, has been in charge of various branches for this company and has traveled up and down the coast for years, so that he needs no introduction to the tire trade of the West.

* * *

It is announced that the Taxicab Co. of California, the largest concern of this kind in San Francisco, has adopted "Nobby Tread" tires for use on all its cars and hereafter will use no other make. A similar decision was some time ago reached by the principal taxicab company in Stockholm, Sweden, whose purchases of these tires for 1913 reached a total of \$34,000.

* * *

Plans are under way for the construction of a highway between San Francisco and Los Angeles, which will cost \$2,000,000, and which is to be completed and ready for use in time for the Exposition next year. Meetings have been held by the San Francisco Chamber of Commerce, representatives of Los Angeles and counties through which the road will pass, the Exposition company, the State Automobile Association, etc.; and a plan has been prepared by which \$2,000,000 is to be set aside in State Highway bonds, to be taken by the interested communities, Los Angeles to take \$1,300,000, and a bonus of \$75,000, required for the sale of the issue, to be raised in equal parts by the counties interested.

* * *

The Batavia Rubber Co., of Batavia, New York, is now being represented in southern California by the Pasadena Rubber Supply Co., at Pasadena, and the Long Beach Motor Supply Co., at Long Beach; while L. A. Irish has been employed to cover the sections north and southeast of Los Angeles, as far as San Francisco and into Arizona, with his headquarters at 332 West Pico street, Los Angeles.

* * *

It seems scarcely credible, at first glance, that a few innocent toy balloons should tie up street traffic, cause men and boys to climb telegraph poles, and collect a more or less riotous mob of from 10,000 to 20,000 persons; but this is just what happened recently in Los Angeles, when George T. Cline, a sporting goods dealer, opened a store in that city and made use of toy balloons as a means for distributing a particular form of advertising matter. Mr. Cline had released from the second story window of his new store at Sixth and Spring streets 1,000 balloons,

attached to each of which was an order entitling the possessor, when presented at the store, to some article sold by the company—these prizes ranging all the way from a baseball to a bicycle. Under the circumstances it is not surprising that immense crowds came together. While rather an expensive form of advertising, this idea as carried out is said to have been very effective and to have established the popularity of the new store not only with those who captured balloons and prizes, but also with their less successful competitors.

At the retail store of the Hendrie Rubber Co., on Pico street, Los Angeles, a tire accessory department has been installed, in charge of Duke Ainslie, a veteran rubber man, where a complete line of tire and rubber repair supplies will be carried for distribution in that vicinity and in Arizona. This company, whose factory at Torrance, California, was formally opened on August 16 last, has already established branches in San Francisco, Denver, Salt Lake and Colorado Springs.

The Savage Tire Co., of San Diego, has closed a contract with J. C. O'Gorman, of Portland, giving him the exclusive agency for Savage tires in Oregon. Mr. O'Gorman is president of the O'Gorman Rim Co., of Portland, a large automobile supply and accessory concern, which has carried Savage tires for several months, and the success he has met with in their distribution among local users has been very gratifying.

The competition for a cup awarded annually by the United States Tire Co. to the branch which makes the largest net gain in sales pro rata during the year has been awarded this year to the Portland, Oregon, branch, of which C. H. Mayer is manager.

STANDARD HOSE COUPLING.

The history of fire-fighting in this country is intimately connected with the development of hose couplings. Tracing the subject back for more than forty years, it will be found that the unquestionable importance of a national standard hose coupling was clearly demonstrated by the great conflagration at Boston of December 9 and 10, 1872. On that occasion the differences in thread prevented most of the thirty neighboring cities from assisting in extinguishing the fire through their inability to connect with the hydrants or engines. In consequence a number of these surrounding cities, taking to heart the lesson taught by the big fire, adopted the coupling used in Boston and known as the Roxbury coupling, which now practically forms the national standard.

Chief John S. Damrell, who had been at the head of the Boston fire department at the time of the conflagration, became a zealous advocate of the standard coupling, particularly at the conventions of fire engineers held at Baltimore in 1873 and St. Louis in 1874. A special committee appointed at New York in 1875 made a recommendation of eight threads to the inch at Philadelphia in 1876, which was found impracticable and was followed by another from a new committee appointed at Cleveland in 1876.

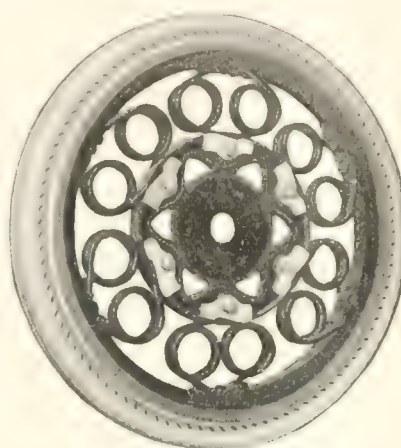
This committee recommended at the Washington convention of 1879 a coupling with six threads to the inch, which standard was unanimously adopted as ensuring freedom from clogging. This action was confirmed by a resolution adopted at Boston in 1880, and the next step was the report presented at Springfield, Massachusetts, in 1891 by ex-Chief Landy of Elmira, New York, recommending a change from six threads to 7½ threads. At the Chattanooga convention of 1904 still another committee was appointed, which reported at Duluth in 1905 for six threads; its opinion being, however, finally overruled by the convention in favor of the Landy 7½ threads coupling. This has since been

the standard coupling of all fire departments and water works associations through the country. It is practically the Roxbury coupling as used in Boston in 1872 and has been adopted by several hundred cities and towns of the United States and Canada. The Roxbury standard is one of the oldest in existence.

Much of the credit for the introduction of the standard hose coupling is due to F. M. Griswold, chairman of the committee on standard hose threads of the National Fire Protection Association.

A WHEEL WHOSE SPOKES ARE SPRINGS.

The rubber heel men are always eulogizing their goods on the ground that they "take the jar off the spine." Now that is exactly what the people busy on the invention of wheels and



SOUTH BEND SPRING WHEEL.

tires for motor vehicles are trying to do, get something that will take the jar off the motor's spine—that is, keep its machinery from vibration, and thus insure it long life and durability. The manufacturers of the South Bend Wheel, which is illustrated here, claim that they have succeeded in this undertaking, that their wheel—which substitutes coiled springs for straight spokes—when equipped with

a cushion tire, minimizes vibration, relieves the jar, greatly increases the life of the mechanism in the car and the service of the tires. This wheel can be applied to the hub of any make of car with very little mechanical difficulty. (South Bend Spring Wheel Co., South Bend, Indiana.)

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the month of January, 1914, and for the first seven months of five fiscal years, beginning July.

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
January, 1914.....	\$175,268	\$57,244	\$463,778	\$696,290
July-December, 1913..	1,254,589	697,823	3,842,106	5,794,518
Total, 1913-14.....	\$1,429,857	\$755,067	\$4,305,884	\$6,490,808
Total, 1912-13.....	1,583,069	973,423	4,695,696	7,252,188
Total, 1911-12.....	1,297,422	1,076,492	3,987,743	6,361,657
Total, 1910-11.....	1,215,134	1,600,041	3,397,718	6,212,893
Total, 1909-10.....	1,096,459	1,371,199	2,739,953	5,207,611

The above heading, "All Other Rubber," for the month of January, 1914, and for the seven months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
January, 1914.....	\$137,889	\$35,891	\$173,780
July-December, 1913.....	1,744,792	303,499	2,048,291
Total, 1913-14.....	\$1,882,681	\$339,390	\$2,222,071
Total, 1912-13.....	2,050,843	366,761	2,417,604
Total, 1911-12.....	1,374,337	291,460	1,665,797

The Development and Design of a Machine for Producing Plantation Rubber by the Brazilian Smoking Method.

By H. M. Korn, of the New York Rubber Co., Ltd.

WHEN in the summer of 1910 Mr. E. A. Korn, the crude rubber importer and merchant of New York, made his tour of the rubber producing countries of the Far East he was greatly impressed by the uneconomic and inefficient methods employed on the plantation in the production of crude rubber from rubber latex.

Having visited Brazil several times before taking his trip east he was naturally well acquainted with the careful coagulating and curing methods in use there, so the difference between the two methods of coagulation was brought home to him most forcefully, and it was easy for him to explain the evident reasons for the difference in quality of the resulting rubber. It is of course well known that the market value of best plantation fine is about 10 cents per pound lower than that of Brazilian Upriver Fine, but that this self-depreciation is entirely unnecessary and can be avoided is not so generally known to the plantation owners.

Mr. Korn in an interview with the "Ceylon Observer" stated at the time of his stay in Ceylon that if plantation latex were smoke-coagulated and cured like Brazilian, the resulting rubber would be equal in quality and market value to Brazilian Fine from the Tapajoz region. His views were seriously disputed by a few whose actual experience and knowledge of the subject really did not entitle them to assume the role of critics. It is quite clear to those who are capable of logical reasoning that if certain treatment is applied to a certain organic substance with a certain resulting reaction, the same treatment applied to the same organic substance, in another part of the world, will cause the same reaction—and a like product will result in both cases. This argument covers the case exactly and completely, for the two latices come from the same species of trees—*Hevea Brasiliensis*. There are, of course, some differences in soil and climatic conditions as well as in the age of the trees, but they do not seem to have any appreciable effect either way on the quality of the latex tapped in the East.

It must therefore be admitted that the rubber producers of the East are at the present time incurring a large loss in possible returns, a loss which in fact amounts to approximately \$20,000,000 annually, because the inferior and inefficient methods of coagulation decrease the value of the resulting rubber to that extent.

It is the purpose of this article first to show the truth of the existence of this actual loss of \$20,000,000 per year to the planters; secondly, to show how this immense loss may be practically eliminated by the use of proper coagulation and curing methods, and, thirdly, how these methods can be effectively employed on the rubber plantations of the East.

We shall assume in our computations that the quality of Eastern rubber cannot quite be brought up to the finest Brazilian Upriver Fine—even by proper coagulation. This assumption is made simply to be on the conservative side of our estimate. It is to be expected, of course, that the latices are a little different in chemical composition, first because the soils are somewhat different, the soil in Brazil being alluvial while that in the East is mostly primary formation (laterite). Secondly, most of the trees in the East are younger than those tapped in Brazil, and the latex from young trees contains slightly more resin, which tends to weaken rubber. It must further be remembered that the

Eastern trees are all seeded from the forest of the Tapajoz region in Brazil.

We shall therefore draw our comparison between Tapajoz Fine rubber and plantation smoked sheet, based upon market conditions existing in New York at the beginning of March, 1914.

Market value of Tapajoz Fine, per lb.	70 cents
Market value of plantation rubber, smoked sheet, per lb.	60 cents
Value of plantation rubber to the manufacturer, per lb.	44 cents
Loss in weight in washing Tapajoz Fine.....	20 per cent.
Loss in weight in washing plantation smoked sheet.....	3 per cent.
Value of Tapajoz Fine to the manufacturer, per lb.	56 cents
Value of plantation smoked sheet to the manufacturer after washing, per lb.	63 cents

Excess value of Tapajoz over plantation ready for working, per lb. 23 cents

This at the present rate of production of about 50,000 tons per year means an approximate loss of:

$$\frac{23 \times 50,000 \times 2,000}{100} \text{ (taken conservatively) } = \$20,000,000$$

to the plantations taking part in this enormous production.

Having proven the rather startling fact that this article of immense commercial utility is being produced to the extent of 50,000 tons per year at an actual monetary deficiency in legitimate and possible returns of approximately 20 cents per pound, we shall now show:

- (1) That the inferior quality of Ceylon Rubber is due to improper coagulation methods.
- (2) That the Brazilian process of coagulation, if applied to Eastern latex, will produce rubber in every essential of quality like Brazilian Fine rubber, and will add \$20,000,000 to the annual returns of the plantations in the East.
- (3) That the Brazilian process of coagulation can be applied to Eastern conditions of production if it is made mechanical.

Regarding our first contention, namely, that the inferior quality of Eastern rubber is caused by improper coagulation methods: It is generally known that the methods employed on the Eastern plantations at the present time merely result in a more or less complete coagulation (without curing) of the latex; i. e., they simply draw together the rubber particles in the latex, with their consequent more or less complete separation from the water content, which often runs as high as 65 to 70 per cent. None of the processes effect the counteraction of the proteins which later cause putrefaction of the rubber and a conversion (within a comparatively short time) of the good rubber into a sticky, lifeless substance. It is equally well known, at least among manufacturers of rubber goods, that any rubber coagulated in this way lacks in resiliency; it is "short," and does not possess the long life of good Brazilian rubber.

It is for these reasons that plantation rubber, although produced from the same species of trees as Brazilian, has been lower in actual value than Brazilian grades.

If in contrast to the above we will now study the Brazilian methods of coagulation we cannot help but feel that it will result in a far superior grade of rubber. The latex there is coagulated and cured in layers no thicker than 0.01 of an inch (0.25 of a millimeter) by the chemical and preservative action of the smoke of tropical woods. This smoke is com-

posed of a complexity of gases, including hydrocarbons, carbon monoxide and dioxide, and, most important from our standpoint, slight quantities of acid and creosote vapors. The acid vapors bring about coagulation, but being in such dilute condition they cannot injure the rubber fibre. Creosote is known to be one of the most powerful preservative agents. Its action on the latex is to eliminate the protein matter which in time would cause the putrefaction of rubber which is known as tackiness. Finally, the heat of the smoke brings about the evaporation and consequent removal *during* coagulation of a large percentage of the water in the latex. This, it is presumed, will allow a more perfect union of the molecular particles of rubber and a consequent greater intermolecular attraction (cohesion) than if all the water remained until *after* coagulation. This ought naturally to result in a *greater tensile strength*.

Our second contention, namely, that the standard of quality of plantation rubber can be raised to that of Brazilian Tapajoz Fine, can be proven by a series of experiments like those conducted by the designers of the smoke-coagulating machine described below. Furthermore, the latices are drawn from trees of the same species, as already mentioned; therefore they ought to be, and have been proven to be, very similar in chemical composition, and to yield to the same treatment with similar results. The loss of \$20,000,000 per year is therefore an unqualified waste, and can be avoided, as it is simply the result of uneconomic production methods.

Regarding our third contention, namely, that the Brazilian process of coagulation can be applied to Eastern plantation conditions: We have performed many quantitative experiments which have proven beyond any doubt that the Brazilian coagulation operation can be performed by a machine.

The slowness and laboriousness of the Brazilian hand process is therefore no more a deterring factor to its use on plantations.

The coagulating machine, which M. H. Korn, civil engineer, and H. W. Farwell, lecturer and instructor in the department of physics at Columbia University, have evolved and patented after three years of study and experimentation, performs the coagulation operation exactly as the Brazilian does it, but with a very great saving in labor and time. The several machine models have shown under exact quantitative experiments that we can coagulate and cure up to $1\frac{1}{2}$ tons of latex per day of 10 hours on one machine, the resulting rubber being exactly like the Brazilian grade of smoke cured rubber.

The efficiency of the machine and its large capacity are simply the result of:

- (1) A larger coagulating area on which the latex may be exposed to the coagulating and curing action of the smoke.
- (2) A more undiluted and thorough application of the smoke constituents.
- (3) A more rapid, exact and even application to the coagulating cylinder of the minutely thin layers of latex, none of them being thicker than 0.008 of an inch (0.2 of one millimeter).
- (4) The timely use of a correct and evenly preserved smoke-temperature.

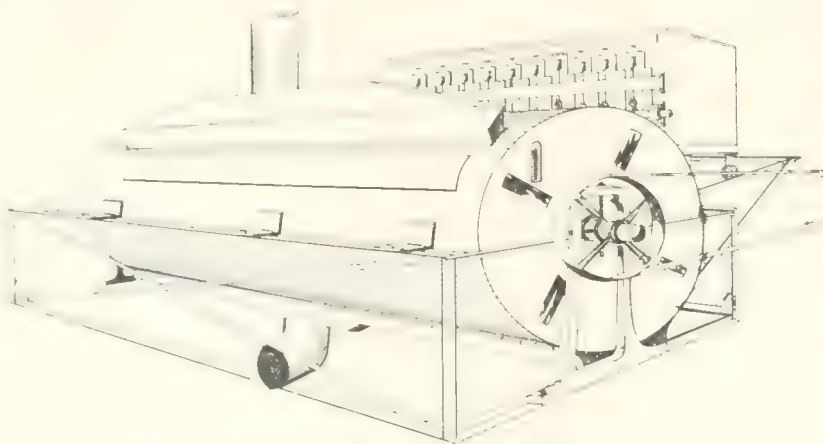
GENERAL STRUCTURE OF THE COAGULATING MACHINE AND ITS MODE OF OPERATION

In order to obtain a general conception of the structure of the machine reference will be made to the perspective drawing in the following description:

The machine consists essentially of a smoke chamber, within which a coagulating cylinder revolves at a constant speed, and which is carried by lugs on the truss frame. A smoke inlet and an exhaust port are so disposed over the surface of the smoke chamber that the coagulating smoke, which is kept at a constant temperature throughout, will completely envelope the coagulating cylinder at all times. The latex is conveyed from the general receiving tank to the latex-reservoir seen in the drawing on top and a little to one side of the smoke chamber. The reservoir runs on a track, bolted to the rear of the truss frame, so that it may be moved toward or away from the coagulating cylinder as required. The front face of the reservoir is fitted with a series of orifices, which are opened and closed by means of gates. These gates are actuated by a central cam shaft and a series of cams. The cam shaft is operated by a set of intermittent or "time" gears, which in turn obtains its power from the main shaft of the coagulating cylinder. This time gearing, not seen in the illustration, is a necessary and ingenious adjunct to the machine, inasmuch as it provides for and automatically takes care of the most disturbing factor in smoke coagulation, namely, the variation in the percentage of water contents in the latex. The rapidity of smoke coagulation depends almost entirely on this. The time gearing gives a range of from one-quarter to five times the average length of time required to completely coagulate a layer of rubber of constant and predetermined thickness. The sectional area of the latex orifices may be varied somewhat, but is ordinarily set so that the flow from them is such as to deposit a layer of latex of 0.008 of one inch maximum thickness. The smoke generator is a simple grated combustion chamber so arranged that slow combustion of the fuel will take place in order to generate the maximum amount of smoke. The gases of combustion are drawn into the machine by suction, there set in whirling motion to reach every exposed particle on the surface of each new layer of latex, and are then expelled into the atmosphere. The orifices are protected against any possible clogging by precautionary devices, which have shown their effectiveness in actual tests on models of the machine.

The operation of the machine is somewhat as follows: The batch of milk to be coagulated during the day, and stored in a general receiving tank, is first tested for its water contents by means of a small gage. The percentage of water present being known, the intermittent gearing which fixes the time allowed

each new layer of latex to coagulate and cure is set by the movement of a setting lever to the correct time gear. The latex is then allowed to run into the reservoir, which it will fill to a certain depth, kept constant throughout the operation. The smoke generator, having been started, it is made to pass into and through the machine. Before entering, however, the gases are brought to the correct temperature for proper curing, considering the water



GENERAL VIEW OF RUBBER COAGULATING MACHINE.

Designed by Max Henry Korn, C. E.,
82 Beaver St., New York.
Herman W. Farwell, A. B.,
Dept. Physics, Columbia University.

Designed by Max Henry Korn, C. E.,
82 Beaver St., New York.
Herman W. Farwell, A. B.,
Dept. Physics, Columbia University.

contents of the latex and several other factors. The coagulating cylinder may now be started revolving, and the time gearing operating the orifice gates set in motion. Successive, thin layers of latex will then be deposited upon the surface of the coagulating cylinder, and cured successively until the operation is stopped at night. The smoke chamber doors are then opened, and the whole thickness (possibly up to a foot thick) of the coagulated rubber is removed from the cylinder. The machine is then ready for the following day's work, except for certain mechanical cleaning and oiling.

The economic importance and value of the machine can be easily appreciated by the plantation owners, but it will be interesting to enumerate some of the beneficial results of its installation and use:

- (1) It will eliminate the enormous loss incurred through present uneconomic coagulation processes.
- (2) It will materially reduce the operating expenses on plantations, for the machine with only one attendant will convert the fresh latex into smoked rubber.
- (3) It would put plantation rubber on a sounder basis in its competition with "wild rubber," and thereby increase the value of plantation rubber investments to a material extent.

Throughout the work of mechanical development and final design of the present embodiment of the machine, the designers kept the fact in mind that in order to avoid committing serious errors of design it would be necessary to construct a machine which in principle would perform the Brazilian method of coagulation and curing exactly as the Brazilian does it. In the development of the present machine the designers were greatly assisted by their friends in Brazil and the East whose reliable information regarding the Brazilian process and other important conditions of production was found to be necessary to the successful completion of the designs of the machine. The designers were especially careful to verify all the important phases of the process by personal experiments conducted in the laboratories with a quantity of fresh latex sent for that purpose from the Ceylon plantations. All these experiments were performed quantitatively, the results being noted very carefully on experimental log-sheets for future reference.

The construction and operation of the machine are both extremely simple, for the designers realized that next to embodying the principle of the Brazilian smoking process the machine must be very simple to operate, and mechanically suited to the conditions existing on plantations. The capacity of the largest practicable machine is about 1½ tons of latex per day of 10 hours continuous operation. Smaller machines with less output, but capable of equally efficient results, can, however, be built to suit the individual demands of the various plantations.

RUBBER GOODS MANUFACTURING CO.'S FIFTEENTH ANNUAL MEETING.

ON April 9, 1914, the Rubber Goods Manufacturing Co. held its fifteenth annual meeting at the registered offices of the company in Jersey City. The president presented the following report:

REPORT OF PRESIDENT WILLIAMS.

TO THE STOCKHOLDERS OF THE RUBBER GOODS MANUFACTURING CO.:

The fiscal year 1913 witnessed a very large decline in prices. This, of course, reduces the value of the goods sold. The quantity of goods sold compares very favorably with previous years. The total net sales of our product were \$35,640,365 (the tire sales included in this total not being the deliveries of the factories to the United States Tire Co., but a proportion of the United States Tire Co.'s actual sales based on the deliveries).

The net profits were less than in the year 1912, due to the declining market and a very sharp reduction in tire prices.

As our tire manufacturing subsidiaries required a larger amount of working capital, six per cent. preferred stock of cer-

tain tire companies was issued during the year to an amount aggregating \$1,300,000 the same being subscribed for by the United States Rubber Co.

The usual policy of maintaining our plants in good repair has been followed. The enlargement of the Morgan and Wright tire plant at Detroit is nearing completion and its capacity is steadily increasing.

The report of the treasurer appended hereto gives the consolidated general balance sheet and consolidated statement of the Rubber Goods Manufacturing Co. and its subsidiary companies for the fiscal year ending December 31, 1913.

Respectfully submitted,

ELISHA S. WILLIAMS, PRESIDENT.

TREASURER'S REPORT.

RUBBER GOODS MANUFACTURING CO. AND SUBSIDIARY COMPANIES.
Consolidated General Balance Sheet, December 31, 1913.

ASSETS.

Property, plants and investments.....	\$31,908,175.92	
Inventories, mfd goods and materials. \$8,109,176.69		
Bills and accounts receivable.....	9,958,320.78	21,154,251.24
Stock owned in General Rubber Co..	1,666,700.00	
Securities owned	384,030.55	2,050,730.55
Sinking fund cash in hands of trustee.....		422,541.35
Miscellaneous assets		432,357.62
Total assets		\$55,968,056.68

LIABILITIES.

Capital stock, preferred.....	\$10,351,400.00	
Capital stock, common.....	16,941,700.00	
Capital stock, subsidiary companies.	1,337,500.00	\$28,630,600.00
Bonds of Mechanical Rubber Co. and N. Y. Belting and Packing Co.....	953,000.00	
Reserve for redemption of bonds.....	382,295.77	
Bills and accounts payable.....	8,846,747.85	
Accounts payable to General Rubber Co.....	5,938,105.18	
Reserve for federal income tax.....	51,853.60	
Reserve for accidents to employees.....	89,725.69	
Fixed surplus (subsidiary companies).....	2,499,218.65	
Surplus	8,576,509.94	
Total liabilities		\$55,968,056.68

Contingent liabilities for certain guarantees, which are offset by corresponding contingent assets, are not included.

CONSOLIDATED SUMMARY OF INCOME AND PROFIT AND LOSS FOR YEAR ENDED DECEMBER 31, 1913.

Earnings	\$3,198,597.68	
Income from investments.....	291,672.50	
		\$3,490,270.18
LESS:		
Expenses of home office.....	\$114,006.90	
Interest on bonded and floating debt	998,455.24	
Federal income tax, 1913.....	51,853.60	1,164,315.74
NET PROFITS		\$2,325,954.44
Surplus and working capital, Jan. 1, 1913.....		8,728,891.00
		\$11,054,845.44

*Dividends	\$2,462,518.00	
Reserve for redemption of bonds...	15,817.50	2,478,335.50
Surplus and working capital, Dec. 31, 1913.....		\$8,576,509.94

Respectfully submitted,

E. J. HATHORNE, Treasurer.

*Includes \$43,750 paid minority interests in one subsidiary company.

ANNUAL ELECTION.

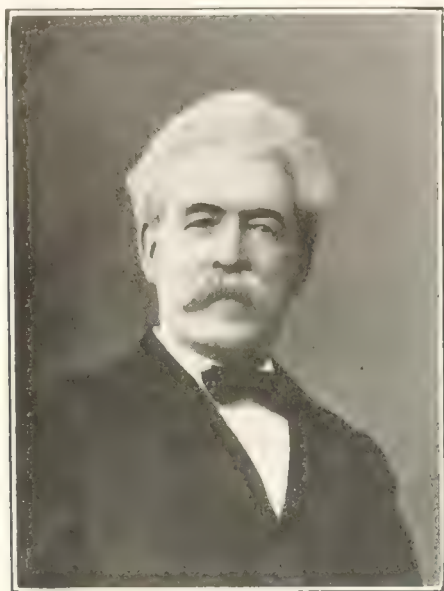
At the annual meeting the following directors were re-elected:

Walter S. Ballou,	Ernest Hopkinson,
Nicholas F. Brady,	Charles A. Hunter,
Samuel P. Colt,	Lester Leland,
Frank W. Eddy,	Raymond B. Price,
James B. Ford,	Homer E. Sawyer,
	Elisha S. Williams.

The Obituary Record.

JOHN H. FORSYTH.

JOHN HAMILTON FORSYTH, associated for nearly fifty years with the Boston Belting Co., died on April 14 at his residence in Winthrop, Massachusetts. Mr. Forsyth was born in Brookline, a suburb of Boston, March 19, 1842. At a comparatively early age he became identified with the Boston Belting Co., with which his father, William Forsyth, was con-



JOHN H. FORSYTH.

nected. He left the company, however, temporarily, to make a thorough study of the machinists' trade, and having thoroughly mastered this subject he returned to the company as its master mechanic. He held this position for a number of years, and then became assistant superintendent.

Mr. Forsyth was well known to many of the older mill men through New England, and in fact other sections of the country, whose plants he visited with a view to installing in them rubber covered rollers and other lines of rubber goods. He retired from active participation in the company in 1912, at which time his associates addressed him a letter of appreciation, from which the following is a paragraph:

"Your connection with the Boston Belting Co. has closely continued, almost without interruption, for over fifty years, a remarkably long period. You have witnessed in that time great changes in many ways, and have been yourself an important factor in the growth and development of the company's business. You have served the company faithfully and well, and with your devoted brothers have applied painstaking care, ingenuity, skill and energy in various ways, which have contributed to the welfare and success of the Boston Belting Co."

Mr. Forsyth was broadly philanthropic, as an illustration of which might be cited the great Forsyth Dental Infirmary given by himself and his brother Thomas to the school children of Boston in memory of James Bennett and George Henry Forsyth. This institution, the initial donation for which was half a million dollars, was not only original in its character, but almost incalculable in the benefits that will flow out from it year after year to the poor children of Boston and vicinity.

The funeral services were held at St. John's Episcopal church in Winthrop on April 17, and during that hour all work at the Boston Belting Co.'s factory and at the Dental Infirmary was suspended.

J. ELLWOOD LEE.

J. Ellwood Lee, president of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, died April 8 at his home in that city, of heart trouble and hardening of the arteries. He was born in 1860, and in 1883, when but 23 years of age, he started a small business in the manufacture of surgical rubber goods.



J. ELLWOOD LEE.

This prospered, and under the name of the J. Ellwood Lee Co. became a very well known and successful concern. Later he began the manufacture of tires, and the name of the corporation was changed to the Lee Tire & Rubber Co. Mr. Lee was not only a man of considerable inventive genius, but he was an organizer and executive of marked ability, and his business career was an exceptionally successful one.

His wife and three children—J. Ellwood Lee, Jr., Mrs. Elsie Carthwaite and Miss Nina Lee—survive him.

GEORG HEISE.

Georg Heise, director of the Hannoversche Gummiwerke, "Excelsior," of Hannover-Linden, Germany, died March 24. He had been connected with this company for 42 years, and was not only successful as a rubber manufacturer, but was widely known and very popular in the rubber trade of Germany.

JACOB HAMMER.

Word has been received of the death a few days ago at El Centro, California, of Jacob Hammer, for the last ten years president of the Colorado Rubber Co.

Mr. Hammer's ancestors were among the pioneers in the settlement of St. Paul, Minnesota, and as a boy he was connected with a bank in that city. Later he joined the St. Paul Rubber Co. and became its secretary and treasurer, but about ten years ago his health began to fail and it was necessary for him to seek a different climate, so he went to Denver and took up his residence there and established the Colorado Rubber Co., becoming its president.

Tho this change of residence undoubtedly prolonged his life many years, it did not restore him to his former physical condition; but notwithstanding the fact of his continued ill health, he bore himself with a cheerful stoicism, applied himself industriously to his work and was agreeable and companionable

with everyone he met. While his life was spent chiefly in the West, he had many warm friends among the rubber men of the East.

SAMUEL HEILBUT.

Samuel Heilbut, member of the great London rubber importing house of Heilbut, Symons & Co., and for the last half century prominent in rubber circles in England and the continent, died in London on the morning of April 3. Mr. Heilbut was not only one of the leading rubber importers of England, but he was one of the few people who early saw the prospective productiveness of the Eastern plantations, and many years ago he became an extensive shareholder in some of the plantations that later proved very profitable. The firm of Heilbut, Symons & Co. was established in London in 1849 and opened a branch in New York in 1864. It has branch offices in Liverpool, Hamburg, Antwerp, Paris, Bordeaux and in Pará, Manáos. The two surviving partners, Frederic C. Pusinelli and Hermann Reimers both happened to be in New York at the time of Mr. Heilbut's death. Mr. Pusinelli immediately returned to London, while Mr. Reimers sailed for Brazil to look after the company's interests there.

RESOLUTIONS ON THE DEATH OF GEORGE P. WHITMORE.

The following resolution was adopted by the Executive Committee of the Rubber Club of America at a recent meeting:

Whereas, Death has released from its earthly tenement the spirit of our beloved former treasurer and fellow-member, George P. Whitmore, we, the members of the Rubber Club of America, in token of our deep grief, tender the following resolutions:

RESOLVED: That in the passing of George P. Whitmore, the rubber trade and business world lose one whose record, clean, consistent, unblemished, marked him as one to be respected and chosen as a worthy example for those who follow; whose personality, pulsing with friendliness, charity and wholesome common sense, won for him the esteem and love of all who came in touch with him.

RESOLVED: That his memory, cherished as a beloved member and a co-founder of the club, be often before us, and to that end that these resolutions become a portion of the records of the club.

RESOLVED: That a copy of these resolutions, with the deep sympathy of the club, be engrossed and sent to the loving companion who shared the burdens and joys of his life for so many years, and to the last comforted and strengthened him with wisely counsel and unrelenting care.

March 6, 1914.

Committee on Resolutions: Elston E. Wadbrook, Chairman; Elisha S. Williams, L. Dewart Apsley.

LATEST REPORT ON NAVY SPECIFICATIONS.

MR. W. C. GEER, of Akron, the secretary of the Manufacturers' Sub-Committee on the revision of the rubber specifications of the United States Navy Department, submits the following report showing what has been done by the general committee and the two sub-committees—one representing the navy department and the other the rubber manufacturers—appointed in December, 1911, to draw up a set of specifications that should be at once satisfactory to the government departments and to the manufacturers of rubber goods used by the departments.

Mr. Geer has sent a copy of this report to the manufacturers interested, and asks for their comments and criticisms, and particularly for suggestions as to any new points not yet discussed by the members of the committees. His report is as follows:

On December 15, 1911, a conference of rubber manufacturers was called by the Navy Department, with a view to discussing the specifications for rubber goods then in use by the Navy. This conference was called as a result of more or less dissatisfaction, which had been expressed by the manufacturers, over the uncertainties and inconsistencies in the Navy specifications. It was thought that by securing an expression of opinion from the manufacturers themselves, some action might be taken by the Navy Department, which would make it possible to eliminate those parts of the specifications which were unsatisfactory either to the manufacturers or to the Navy.

In response to the Navy Department's invitation nearly forty attended the conference, some of whom represented other departments than the Navy, while the majority represented rubber manufacturers. Naval Constructor E. S. Land, of the Bureau of Construction and Repair, U. S. N., acted as Chairman of the Committee. So many manufacturers were present, and so many suggestions made as to the method of procedure, that it was thought advisable to appoint a committee consisting of two sub-committees, one to represent the rubber manufacturers and the other the various Government departments. After short, separate conferences of the sub-committees, the Whole Committee decided upon a plan of action involving a revision of the specifications to provide for the elimination of the undesirable features, while maintaining the high grade of material demanded by the Government. The chief difference of opinion among those at the conference centered around elimination from the specifications of all reference to grades of rubber and chemical composition, and the substitution therefor of such physical tests as would insure the purchase of as high grade materials as those purchased under the existing specifications.

The members of the Manufacturers' Sub-Committee agreed that they would, in a series of subsequent meetings, work out a revision of the specifications which would embody the ideas of the majority of the manufacturers represented. These should be submitted to the Committee of the Whole for discussion and adoption if the proposed changes should prove acceptable to the Government departments. After two meetings it was found that a fundamental difference of opinion existed among the manufacturers relative to the proposed changes. Accordingly, a report was drafted consisting of a majority report favoring elimination, and a minority report favoring retention of specifications respecting chemical composition of the rubber. This report also included a unanimous report in favor of the adoption of standard testing methods and testing machines.

The report was mailed to Chairman Land, with the request that it be considered by the Government Sub-Committee and that the manufacturers be advised of the opinions of the Government departments with respect to the fundamental question involved. The Government departments stood unanimously opposed to the elimination of chemical requirements, and suggested that the manufacturers proceed to revise the specifications only so that they might conform to the best commercial practice. Accordingly, the Manufacturers' Sub-Committee in a series of seven meetings, proceeded to redraft all of the Navy specifications. These meetings continued at intervals through the year 1912.

Finally, in April, 1913, the chairman called a meeting of the Committee of the Whole to discuss the specifications as revised. The members of the Government Sub-Committee accepted as satisfactory, and agreed to adopt the revised specifications, with slight changes, which were decided upon by both sub-committees during the meeting. It was thought best to continue the Committee of the Whole so that if further action were necessary either in respect to the interpretations or revision of the specifications already adopted, it could be taken without delay.

Owing to the congested condition of the Government Printing Office it was impossible to issue the revised uniform specifications immediately upon their adoption, but they were issued from time to time, commencing with July, 1913. An official notification, countersigned by Chief Constructor R. M. Watt, Chief of the Bureau of Construction and Repair, dated January 24, 1914, was sent by Chairman Land to the Secretary of the Manufacturers' Sub-Committee, announcing the adoption of the revised specifications, as follows:

"As a result of the conference of the Rubber Manufacturers of the United States and representatives of the Government departments in Washington, held in the Bureau of Construction and Repair, Navy Department, Washington, D. C., December 15, 1911, a revision of rubber specifications for the Navy Department was undertaken, and the results of this revision were promulgated by the Navy Department in the form of revised drafts of specifications, which were issued during the summer of 1913. Each specification so revised bears a notation in the 'reference' at the end of the specifications showing that action was taken by the 'Rubber Specifications Committee.'"

Several matters are still pending with the Government which will be taken up in the near future. Some of them now under way are the following:

1. The trying out of specifications not requiring chemical analysis (Air Hose, specifications 34-H-8).
2. The development of commercial specifications not requiring so large a percentage of fine Pará rubber, which will give them a good, serviceable grade of packing for cold water purposes.
3. Obtaining from the Government half of the committee, an official definition of method of analysis, interpretation of results, and other important matters, thus eliminating existing conditions involving possible differences of opinion.

News of the American Rubber Trade.

THE LOEWENTHAL CO. AGENTS FOR "BROWN JACO."

IN addition to conducting a very extensive business in scrap rubber, The Loewenthal Co., located at 37 West 39th street, New York, have been appointed sole agents for Ernst Jacoby & Co., Inc., of 79 Milk street, Boston, for the sale of rubber substitutes of all kinds and more particularly of "Brown Jaco," the new substitute mentioned on page 374 of our April issue. This company also handles a special grade of hydrocarbon under the name of Loewenthal Mineral Rubber, besides being in a position to quote prices on practically every kind of compounding material—barytes, talc, red oxide, sulphur, blanc fixe, etc.

UNITED STATES TIRE CO. DISPOSES OF TWO BRANCHES.

The United States Tire Co. has discontinued its branch houses at Syracuse and Rochester, New York, turning over the wholesale distribution of its product in these two cities to the Syracuse Rubber Co. and the Rochester Rubber Co., respectively. The former manager of the Syracuse branch, Charles Fennel, has become associated with the Syracuse Rubber Co., while Manager Norbury, of the Rochester branch, has been transferred to the company's branch house at Buffalo, and Stanley Keller, formerly with the Rochester branch, is now in the employ of the Rochester Rubber Co.

AMERICANS MAKING TIRE FABRICS IN CANADA.

A number of Americans who have been very successful in the manufacture of tire fabrics in Connecticut have recently organized a new company and built a finely equipped plant for this same sort of work in Canada. This new company is the Canadian-Connecticut Cotton Mills, Limited, and its plant is at Sherbrooke, Quebec. The company is capitalized at \$1,750,000, and the capital issued amounts to \$1,100,000. The officers are: H. L. Burrage, Boston, president; R. J. Caldwell, New York, vice-president; Tracy S. Lewis, Beacon Falls, Connecticut, treasurer, and Obadiah Butler, of Sherbrooke, secretary and manager. This mill is closely allied with the Connecticut Mills Co., of Danielson, Connecticut, manufacturers of tire fabric, the officers of which are: Mr. Lewis, president and treasurer; Mr. Caldwell, vice-president; Mr. Burrage, chairman of the board, and William B. Fittz, Danielson, secretary and manager.

This new Canadian company hopes to be able to supply the Canadian tire manufacturers with a large part of their fabric, and is said to have a number of them already among its customers. In addition to tire fabrics it will make cotton dryer felts for paper mills.

A NEW WATERPROOF GUM.

The February issue of this publication mentioned the incorporation of the British-American Manufacturing Co., which in turn controls the American Ramie Co. The American Ramie Co., interested, as its name implies, in the manufacture of ramie textiles, has been in operation for some four or five years, but the British-American company was recently formed, with factory at Laurel, Maryland, to manufacture waterproof fabrics, principally for use in making garments. It does not use rubber, but employs an imported gum, the utility of which for waterproof purposes has but recently been discovered. This gum can either be incorporated with the fabric or spread over the surface. The company makes material of both kinds. The company has already submitted bids for extensive contracts with the Government for material for army garments. The vice-president of the company, W. M. Mackintosh, is a Scotchman, and belongs to the family which contributed the name "Mackintosh" to the rubber garment industry. Dr. L. C. Himebaugh, the secretary and treasurer, is also the laboratory expert. Previous to going with this company he was associated for five years with the Lederle laboratory in New York.

CAPITAL INCREASES.

The Apsley Rubber Co., of Hudson, Massachusetts, has increased its capital stock from \$1,000,000 to \$1,500,000, having issued 5,000 additional shares of preferred stock at \$100 per share. The new stock was offered to both common and preferred stockholders, in the ratio of one new share for every two shares of stock held, the right to subscribe expiring on April 2.

Stockholders of the Falls Tire & Rubber Co., of Cuyahoga Falls, Ohio, at a meeting held late in March, voted to increase the capital stock of that company to \$300,000, its former capitalization having been \$200,000. At that meeting it was also decided to establish a factory branch at Cleveland, Ohio, to succeed the F. J. Allen Co. which for the past year has acted as the company's agent in that city. John Welton, Jr., of Akron, will be in charge of the new branch, and he will have associated with him Frank T. Williams and F. J. Allen, both of whom were formerly connected with the Allen company.

The McNaull Auto Tire Co., of Cleveland, Ohio, has increased its capital stock from \$75,000 to \$175,000, the new issue being 7 per cent. participating preferred stock. It has also arranged for the erection of a plant at Toledo, Ohio, where tires are to be manufactured, under patents issued to W. D. McNaull.

The capital stock of the Pharis Tire & Rubber Co., of Columbus, Ohio, has been increased from \$50,000 to \$100,000.

RUBBER COMPANY DIVIDENDS.

The following notice was sent out on April 2 by the treasurer, of the United States Rubber Co.: "The Board of Directors of the United States Rubber Co. has this day declared from its net profits a quarterly dividend of 2 per cent. on the first preferred stock, a quarterly dividend of 1½ per cent. on the second preferred stock, and a quarterly dividend of 1½ per cent. on the common stock of the company, to stockholders of record at 3 p. m. on Wednesday, April 15, 1914, payable, without closing of the transfer books, April 30, 1914."

The B. F. Goodrich Co declared on April 22 a regular quarterly dividend of 1¾ per cent. on the preferred stock, payable July 1 to stockholders of record on June 19.

The McGraw Tire & Rubber Co. on April 3 declared a dividend of 1¾ per cent. on its preferred stock.

The Swinehart Tire & Rubber Co. has declared a quarterly dividend of 1½ per cent., payable May 10.

TEN PER CENT. FOR ALDEN CREDITORS.

The district court of Boston confirmed late in March the composition offer of 10 per cent. made to the creditors of Geo. A. Alden & Co., of that city. The offer calls for the distribution of \$232,391.75 among creditors of the firm.

According to the schedules in bankruptcy filed June 3, 1913, the company had liabilities of \$4,090,825, and assets of \$1,605,000. The company was petitioned into voluntary bankruptcy in February, 1913.

SALE OF THE WALPOLE TIRE & RUBBER CO.

The Walpole Tire & Rubber Co. is to be disposed of by public sale to be held at Walpole, Massachusetts, commencing at 10:30 a. m. on Monday, May 11, the property to go to the highest bidder and \$1,150,000 having been fixed as a price below which it will not be sold. This sale will be conducted by the receivers, Robert O. Harris and Robert C. Fisher. The organization committee is said to be prepared to buy in the property.

KELLY-SPRINGFIELD TIRE CO. PLANNING BOND RETIREMENT.

At a special meeting of the shareholders of the Kelly-Springfield Tire Co., to be held May 4, consideration will be given to the adoption of a plan to retire the 4 per cent. income debenture bonds of the company by issuing therefor an equal amount of par value 6 per cent. cumulative preferred stock, on the basis of one share of stock for each \$100 face value of bonds; also to refund the 78½ per cent. of dividend accumulated upon the present issue of 6 per cent. preferred stock by issuing 7 per cent. cumulative second preferred stock, each share, if authorized, to be converted into one share of common stock at the option of the holder at any time before July 1, 1924. The consenting bondholders are to deposit bonds with a trust company to be designated, and the plan will become operative only if bonds of a sufficient amount shall be deposited to justify the directors in pursuing this course.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on April 20 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., common.....	200	..
Ajax-Grieb Rubber Co., preferred.....	98	102
Firestone Tire & Rubber Co., common.....	284	290
Firestone Tire & Rubber Co., preferred.....	107½	109
B. F. Goodrich Company, common.....	25	26
B. F. Goodrich Company, preferred.....	86	89
Goodyear Tire & Rubber Co., common.....	170	178
Goodyear Tire & Rubber Co., preferred.....	95	96½
Kelly-Springfield Tire Co., common.....	55	57
Kelly-Springfield Tire Co., preferred.....	135	140
Miller Rubber Company.....	135	140
Portage Rubber Co., common.....	..	25
Portage Rubber Co., preferred.....	..	75
Rubber Goods Mfg. Co., preferred.....	100	110
Swinehart Tire Company.....	60	65
U. S. Rubber Co., common.....	56½	57½
U. S. Rubber Co., first preferred.....	101	102

THE NATIONAL FIRE PROTECTION ASSOCIATION TO MEET.

Members of the National Fire Protection Association will hold a three days' convention at Chicago from May 5 to 7. The meetings will take place in the Auditorium, and among the subjects discussed will be "New Features In the Work of Underwriters' Laboratories," by William H. Merrill, manager of the Underwriters' Laboratories. The afternoon of the second day will be devoted to a visit to the laboratories, where a number of tests will be made by the engineers connected therewith.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, etc., of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 201 West 105th street, New York.

Business manager, E. M. MacPhee, 344 West Forty-eighth street, New York.

Publishers, The India Rubber Publishing Co., 25 West Forty-fifth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) E. M. MACPHEE, Business Manager.

Sworn to and subscribed before me this 24th day of March, 1914.

(Signed) WILLIAM B. HILL, Notary Public,

(Seal) Kings County.

(My commission expires March 31, 1915.)

Certificate filed in New York County.

MR. BIRKENSTEIN PRESIDENT OF THE WASTE DEALERS

The election of Louis Birkenstein, of the firm of S. Birkenstein & Sons, Chicago, to the presidency of the National Association of Waste Material Dealers was mentioned in the April



LOUIS BIRKENSTEIN.

issue of this publication, in the description of the first annual dinner held by that association. Mr. Birkenstein has also held the position of president of the Scrap Rubber Dealers' Club, and is very active in that industry. His company is, in fact, one of the largest engaged in this sort of work in America, having been founded as far back as 1866 by his father, under the name of S. Birkenstein & Co. Mr. Birkenstein became a partner in his father's firm in 1890, and his brothers were admitted to partnership in 1901.

PERSONAL MENTION.

Frederic Dannerth, known to many people in the rubber trade as a consulting chemist, is at present connected with the Cheney Silk Co., of South Manchester, Connecticut, being in charge of their development work.

E. L. Bullock, president of the Katzenbach & Bullock Co., of New York and Trenton, importers and dealers in chemicals and colors, sailed for Europe on the 20th of April. He expects to make an extended trip in the interest of his company, visiting its foreign connections in Holland, Germany, France, England and Spain. The Katzenbach & Bullock Co. specializes in materials for the rubber trade, and has a large and constantly increasing business.

Frank W. Thropp, secretary of the John E. Thropp's Sons Co., sailed late in March on the "Oceanic" for a two months' visit to London, in the interest of the Delaski & Thropp Patented Auto Tire Co. and for health and pleasure. He was tendered a dinner and card party a few evenings before the date of sailing.

THE BIG BRADY RUBBER HOLDINGS.

Referring to the large estate left by the late Anthony N. Brady, director of the United States Rubber Co., the "Boston News Bureau" remarks: "Mr. Brady was far and away the largest stockholder in United States Rubber. The par of his investment in this company was about \$14,000,000, or 15 per cent. of total stock capitalization." This same publication goes on to say that there is no truth in the rumor that the Brady estate has recently been parting with its rubber holdings on quite an extensive plan. The Bureau states that the administrators of the estate have only parted with such shares in this and other properties, with which he was identified, as it was necessary to convert into cash in order to pay the large inheritance taxes in New York and London.

A COMPLIMENTARY DINNER TO MR. RODENBACH.

After the regular meeting of the Rubber Reclaimers' Club, held on April 2 at the Hotel Vanderbilt, New York, the members adjourned to one of the handsome banquet rooms of that famous hostelry for the purpose of giving a complimentary dinner to Mr. W. T. Rodenbach, who, having recently resigned from his position in the reclaiming work of the United States Rubber Co. at Naugatuck, Connecticut, gives up his association with this important industry in which he has been such an important figure for the last quarter of a century. The dinner was presided over by Capt. F. H. Appleton, the president of the club. When they had completed an appreciative consideration of the menu—which was a fine illustration of what the Vanderbilt chef could achieve when giving his genius a free rein—Capt. Appleton addressed the guest of honor and read the following resolution, passed by the club:

"A committee appointed by the Rubber Reclaimers' Club for the purpose of presenting resolutions on the occasion of the severance of your connection with the club, hereby

"RESOLVE, That your withdrawal from membership in this club, thereby severing the ties that have bound us together for so many years, prompts us at this time to tender to you an expression of our appreciation of your many acts of friendship and kindness to all the members of the club.

"Knowing your usefulness and efficiency, as we do, and the strong impression you will leave with our members who have been so long associated with you, and our realization that through your zeal and fidelity to the club your words and acts have always been helpful to its members;

"We, therefore, tender to you our most gracious wishes for your future success in any business upon which you may enter, and hope that the ties which have existed in the past between you and the members of this club may never be severed.

"And it is further

"RESOLVED, That this testimonial be presented at a dinner given in your honor at the Hotel Vanderbilt, New York City, April 2, 1914."

The Captain paid Mr. Rodenbach a most eloquent tribute and was followed in similar vein by practically everyone present. And last of all Mr. Rodenbach rose to respond. His many years of activity in the civic life of the community in which he has lived has made Mr. Rodenbach an exceptionally ready speaker, and his address was a great addition to the enjoyment of the evening; and, incidentally, it showed how thoroughly he appreciated the genuineness of the tribute paid him by these men with whom he had been associated so intimately and so pleasantly for so many years.

TRADE NEWS NOTES

The extent and growth of the business done by the Minneapolis branch of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, demanding larger quarters and improved facilities, the company has secured a building of its own, at 1423 Hennepin avenue, to which this distributing depot has been removed.

The Mansfield Tire & Rubber Co. is erecting an addition to its tire manufacturing plant at Mansfield, Ohio.

The Miller Rubber Co., of Akron, has established sales offices in Indianapolis, Indiana, at 429 North Meridian street, of which L. B. Broering is manager.

A concern known as the Alamo Tire & Rubber Co. has been formed at San Antonio, Texas, for the sale in that section of Republic tires. Alfred Muller, who is well known in the local tire trade, is at the head of this new concern.

A branch store has recently been opened at 1506 Pacific avenue, Atlantic City, by the Hardman Tire & Rubber Co. for the sale of its tires in that city and the surrounding sections of New Jersey.

A new factory is to be erected by the Bishop Gutta Percha Co. at 417 East Twenty-fourth street, New York City. This

building is to be five stories high, to have a floor area 50 x 98 feet, and is expected to cost in the neighborhood of \$30,000.

A branch sales store has been opened at 2032 Commerce street, Dallas, Texas, by the Automobile Tire Co., of New York City, in charge of Robert Clausius.

The agency for Republic tires at Indianapolis, Indiana, formerly located at 25 West Michigan street, has been moved to 425 North Capitol avenue.

The entire plant and property of the Frontier Tire & Rubber Co., of Buffalo, New York, has been disposed of by the referee in bankruptcy, by sale to Al. G. Irr, at a price of \$10,250. This amount is almost \$4,000 in advance of that offered on bids by parcels.

At the annual meeting of the Detroit Pneumatic Tire Co. recently held at Detroit, Michigan, the following officers were elected for the ensuing year: E. W. Wilson, president; Peter J. Jeup, vice-president; T. S. Sprague, secretary; W. C. Morgan, treasurer. The board of directors is composed of these officers together with Frank H. Watson and Arthur P. Hicks.

The Batavia Rubber Co., whose plant and facilities at Batavia, New York, have been considerably enlarged, has secured as manager of sales for the Eastern district John B. Maus, at one time connected with the Goodyear Tire & Rubber Co. and more recently with the United States Tire Co. His headquarters will be at 1906 Broadway, New York.

The Texas Climatic Tire Manufacturing Association, recently organized, with a capital of \$150,000, is to erect a plant at San Antonio, Texas, for the manufacture of automobile tires especially adapted to the climatic conditions of that state. Eliot W. Knight is named as general superintendent of the business of the association, whose officers are: J. A. Graham, president; Francis T. Parks, secretary; Edward H. Hicks, treasurer.

The Diamond Rubber Co.'s tire sales department in New York City has moved to 1780 Broadway from its former location at 225 West Fifty-seventh street.

The Ontario Tire & Rubber Co., Limited, incorporated February 14, 1914, under the laws of New York, with a capital of \$50,000, to manufacture and deal in tires and rubber goods, has purchased a factory building at Welland, Ontario, where machinery is being installed.

A NEW COMMISSION HOUSE IN COTTON GOODS.

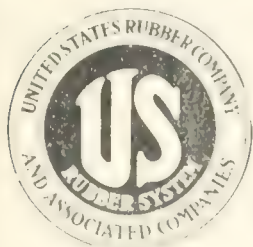
Taylor, Armitage & Co., Inc., is the name of a new concern organized to carry on a general commission business in cotton goods, with an office at 346 Broadway, New York. The president of this company is M. C. Taylor, formerly president of the International Cotton Mills. The manufacturing interests will be looked after by J. F. Armitage, formerly general manager of the International mills and also vice-president of the J. Spencer Turner Co. The secretary and sales manager is R. P. M. Eagles, well known to the rubber trade, having formerly been vice-president of the Boston Yarn Co. and also having been associated with the J. Spencer Turner Co. This new company will act as the sole selling agent for the Passaic Cotton Mills and the American Textilose Co. and probably very soon for several other mills.

MOTOR TRUCKS AND STREET CLEANING.

Compilations of figures on the cost of street cleaning show that the use of motor trucks in this department of its work has saved the city of Chicago probably not less than a million dollars a year. Similar statistics compiled in London show a saving during the year 1911-12, when motor trucks were in use, over the year 1905-06, when horse-drawn vehicles were employed, of amounts ranging as high as \$895 per mile in certain boroughs. The total saving is estimated at \$220 a mile on 2.154 miles of street, or \$473,880 annually.

THE UNITED STATES RUBBER CO ADOPTS A TRADE MARK.

The United States Rubber Co. has adopted a trade mark for the first time in its recent annual report.



first time in its recent annual report. The company controls, of course, a vast number of trade marks, each of the subsidiary companies having one or two general trade marks, besides many others applicable to certain products, but this appears to be the

formed, some twenty-two years ago, that it has deemed it advisable to adopt a general mark applicable to

the entire system. The advantage of having a symbol that shall stand for the company as a whole is obvious.

NEW INCORPORATIONS

Advance Tire Sales Co., Inc., March 23, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Grace A. Burnette, 1733 Broadway; George L. Lewis and Charles H. Stanton, both of 42 Broadway—all in New York City.

Alling Rubber Co., March 25, 1914; under the laws of Pennsylvania; authorized capital, \$10,000. Incorporators: Clarence E. Alling, Stamford, Connecticut; Arthur E. Alling, New Haven, Connecticut; Frederick F. Lockwood, Binghamton, New York, and Clarence D. Coughlin, Wilkesbarre, Pennsylvania. To deal in general merchandise, automobile and bicycle tires and sundries, sporting goods and rubber goods of every description.

Atlantic Aerial Navigation Co., April 15, 1914; under the laws of New Jersey; authorized capital, \$125,000. Incorporators: Kenneth Robertson, James McCutcheon and Donald Robertson, all of 203 Federal street, Camden, New Jersey. To buy, manufacture, sell, repair, exhibit and deal in aeronautical, automobile and electrical accessories, and appliances or other paraphernalia used or capable of being used in the construction and operation of the same.

Atlas Tire Association, The, March 9, 1914; under the laws of Maine; authorized capital, \$10,000. Incorporators: E. M. Leavitt (president and treasurer), Winthrop; R. A. Kittredge (director), Hallowell, and E. M. McLean (director), Augusta—all in Maine. To carry on the business of manufacturing, producing, buying, selling, exporting, importing and dealing in rubber and all goods of which rubber is a component part, etc.

Broderick Inner Tube Protector Co., February 19, 1914; under the laws of Delaware; authorized capital, \$500,000. Incorporators: Wray C. Arnold, Lansdowne, Pennsylvania; Morris B. MacCauley, 516 Queen Lane, Germantown, Pennsylvania; and James M. Satterfield, Dover, Delaware. To manufacture, buy, sell and deal in automobile and bicycle tires, inner and outer tubes or coverings, tube protectors, etc.

C. & S. Rubber Sole Co., March 25, 1914; under the laws of Massachusetts; authorized capital, \$50,000. Incorporators: Ernest L. Shaw, 35 Chester avenue; Francis E. Shaw, 326 West Elm street; Harvey F. Crawford, 952 North Main street; Herbert F. Bryant, 295 Ash street, and Emery M. Low, 234 West Elm street—all in Brockton, Massachusetts. To manufacture machines for improvements in shoes and tread members and for rubber soles, also the manufacture of rubber and rubber goods and soles of all kinds.

Consumer's Tire & Sales Co., March 23, 1914; under the laws of Delaware; authorized capital, \$500,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin, Camden, New Jersey, and S. C. Seymour, Camden, Delaware. To buy, trade and deal in any and all kinds of crude, refined and manufactured rubber, gutta percha and other gums.

Delaware Tire & Supply Co., March 24, 1914; under the laws

of Delaware; authorized capital, \$25,000. Incorporators: Norman B. Mancill, Yorklyn, Delaware; John H. Bishop and Philip L. Garrett, both of Wilmington, Delaware. To manufacture and deal in all kinds of vehicles, automobile tires and accessories, etc.

Dunbar & Co., Inc., April 25, 1914; under the laws of New York; authorized capital, \$200,000. Incorporators: Frederick W. Dunbar and Alfred T. Gibbs—both of Montclair, New Jersey—and George W. Utter, Brooklyn, New York. To deal in crude and other forms of rubber.

Hardman Tire & Rubber Co., April 3, 1914; under the laws of Illinois; authorized capital, \$10,000. Incorporators: C. Beardsley, J. H. Jones, Jr., and F. W. Tyrrell. Location of principal office, Chicago.

Holstein Rubber Co., March 25, 1914; under the laws of Connecticut; authorized capital, \$25,000. Incorporators: Joseph S. Holstein, Reuben R. Kusnott and May S. Gallagher—all of Hartford, Connecticut.

King Rubber Co., The, March 31, 1914; under the laws of Massachusetts; authorized capital \$50,000. Incorporators: Charles A. Briggs, Norwood, Massachusetts; Albert H. Winn, Dover, New Hampshire; Maurice D. Kingsbury, 14 St. Botolph street, Boston, Massachusetts, and Emerson L. Dickerman, 23 Ware street, Cambridge, Massachusetts. To manufacture articles made in whole or in part of rubber, gutta percha, etc.

Motor Tire Reconstruction Co., The, March 13, 1914; under the laws of New Jersey; authorized capital, \$250,000. Incorporators: Charles N. King, Jr., George H. Russell and William L. Steck—all of 243-5 Washington street, Jersey City, New Jersey. To buy, sell, deal and trade in, re-construct and re-manufacture rubber, rubber goods, etc.

Napa Tire & Rubber Co., March 20, 1914; under the laws of Delaware; authorized capital, \$100,000. Incorporators: M. Leon Hirschbein and Anna Hirschbein—both of 1908 North Napa street, Philadelphia, Pennsylvania, and W. I. N. Lofland, Dover, Delaware. To buy and sell automobile tires, tubes and other automobile accessories. Location of principal office, 2003 West Columbia avenue, Philadelphia, Pennsylvania.

National Tire & Rubber Co., February 13, 1914; under the laws of Washington; authorized capital, \$1,000,000. Incorporators: F. P. Maring, N. M. Lee and Frederick Gilbert—all of Seattle, Washington.

Newman Tire & Rubber Co., Inc., April 14, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Stanley Newman and Samuel C. Newman—both of 247 West One Hundred and Twenty-Seventh street—and Arthur Newman, 1775 Broadway—all in New York City. To sell, handle, job and deal in automobile tires, tubes and accessories. Location of principal office and sales room, 1775 Broadway.

Norwalk Tire & Rubber Co., March 23, 1914; under the laws of Connecticut; authorized capital, \$1,500,000. Incorporators: Earle Banks, John Pierce and Sayre Youngs—all of Norwalk, Connecticut.

Norwalk Tire & Rubber Co., Inc., The, April 1, 1914; under the laws of New York; authorized capital, \$1,000. Incorporators: Wm. B. Miller, 12 East Eighty-seventh street, New York City; David Spence, and Fred. L. Lambson—both of Norwalk, Connecticut.

Racine Rubber Tire Co. of New York, Inc., April 22, 1914; under the laws of New York; authorized capital, \$3,000. Incorporators: Edgar Storms, Jr., Kew Gardens, Richmond Hill, New York; Edward W. Drucker, 53 East Ninety-Sixth street, New York City, and Barclay Ball, 41 Trask avenue, Bayonne, New Jersey.

Rexton Specialty Co., Inc., April 17, 1914; under the laws of New York; authorized capital, \$1,000. Incorporators: Richard Siller, 1053 East Tenth street, Otto C. Grahmann, 1264 Decatur

street—both in Brooklyn, New York—and Max Hirsch, 2056 Ryer avenue, New York City. To manufacture rubber goods, etc.

Rubber Retining Co., Inc., March 25, 1914; under the laws of New York; authorized capital, \$20,000. Incorporators: Richard A. Silberhorn, 443 East Third street, Mt. Vernon, New York; John J. Hanrahan, 69 Morningside avenue, Yonkers, New York, and Alfred R. Bunnell, 60 State street, East Orange, New Jersey.

Tire Supply Association, Inc., The, February 25, 1914; under the laws of Minnesota; authorized capital, \$50,000. Incorporators: Mose J. Rosenstein, Louis S. Rosenstein, Louis Rosenthal and Abe W. Juster—all of Minneapolis, Minnesota. To carry on a general automobile tire and accessory business.

Trautwein Tire & Repair Co., Inc., April 22, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators: Walter Trautwein and Otto Trautwein—both of 567 Morgan avenue—and Frederick Trautwein, 569 Morgan avenue—all in Brooklyn, New York.

United Anchor Tire Co., Inc., April 3, 1914; under the laws of New York; authorized capital, \$2,000. Incorporators: Robt. C. Schlesinger, 155 West Seventy-Third street; Frank H. Gross, King Edward Hotel, and George Roots, 1650 Broadway—all in New York City. Auto tires, etc.

United Tire and Rubber Works, Inc., The, April 18, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Aram Saraydarian, 177 East Seventy-Fifth street, Vincent Yardum, 65 West Ninety-First street, and Henry J. O'Connor, 1517 Avenue A—all in New York City.

TO FLY AROUND THE WORLD.

The most interesting enterprise in aviation yet undertaken will be inaugurated in May, 1915, at the exposition grounds in San Francisco. This is nothing less than a flight around the world, an enormous prize—\$300,000—going to the airman who completes the trip and gets back to San Francisco first. In order that those who enter the competition may fly over land as much as possible, the flight, starting at San Francisco, is straight across the continent to New York, thence northeast to Labrador, to Greenland, where the longest jump over the water occurs in the flight from Cape Farewell to Iceland. From Iceland the course is southeast to England, thence to Paris, Berlin, Warsaw and St. Petersburg. Then comes the long stretch over the steppes of Siberia to Harbin and Vladivostok; then across to Japan, up to Kamchatka, across to Alaska and down the Pacific coast to San Francisco. There will be 26 stations where the aviators must stop and report, and where they can get necessary supplies and equipment.

THE CHESTER RUBBER COMPANY READY TO START.

The Chester Rubber, Tire & Tube Co., of Chester, West Virginia, has installed its machinery, and is ready to begin operations at once, with George E. Knowles as general manager. The John E. Thropp system of making wrapped tread tires has been put in, and in addition to that the factory has an equipment for making inner tubes and re-liners, tubing and mold work. It will begin with about 70 employes, but it expects to increase this number by 100 within a short time. The capital stock is held by residents of Chester, and their expectation is that that town will soon be well known among tire consumers.

TIRES BY PARCEL POST.

By a new ruling of the Post Office Department it is now possible to send automobile tires by parcel post. Former measurements of a pneumatic tire amounted to practically three times the diameter of the tire, whereas according to this latest ruling, in the cases of tires simply wrapped, with an open space in the center, the outside diameter shall be considered the length, and the circumference of the tubing as the girth; while in measuring tires packed solidly, without clear space in the center, the diameter of the parcel shall be considered the length and twice the diameter and thickness as the girth.

TRADE NEWS NOTES.

THE INDIA RUBBER WORLD has always prided itself on the accuracy of the statements appearing in its columns, but of course, with a large number of correspondents scattered around over the world—all human—occasionally some inaccuracy will creep in, the only remedy for which is an early correction. In the letter from Akron in our April issue there was a statement to the effect that a trustee in bankruptcy had been appointed for the Akron Rubber Mold & Machine Co. This item, we are very glad to say, was untrue, the correspondent having a totally different company but with a somewhat similar name in mind. The Akron Rubber Mold & Machine Co., according to all advices, is in an exceptionally prosperous condition and is rapidly extending its business and its factory facilities.

Gove & French, Inc., crude rubber brokers, have moved their New York Office to the new Arcade Building 25 Beaver street.

The New York Mackintosh Co., of Mamaroneck, New York, is making extensive additions to its factory.

The report of the Canadian Consolidated Rubber Co., Ltd., shows, for the year ended December 31, 1913, an operating profit of \$910,770, on net sales of \$6,788,858, the profit and loss surplus being given as \$2,129,639, and the surplus after dividends \$139,742.

The Thermoid Rubber Co., of Trenton, has opened a factory branch in Indianapolis, Indiana, which will carry a complete line of "Nassau" casings and tubes and Thermoid brake lining.

H. Muehlstein & Co. have removed their New York offices and warehouse to their new building, 391-395 Washington street, and 31-33 Hubert street.

The Vermont Tire & Rubber Co.—Fred A. Millan manager—has established a sales room and repair department at Barre, Vermont, where, in addition to Diamond tires, for which it has secured the state agency, a complete line of United States, Goodrich and Goodyear tires will be carried in stock.

The George W. Moore Co., manufacturers of elastic fabrics, have recently purchased land adjoining the property now occupied for this purpose and formerly owned by the Westerly Narrow Fabric Co., on Beach street, Norwalk, Connecticut, increasing the holdings of the company to ten acres. It is understood that this property is soon to be improved, not only in the way of factory development but also by the erection of homes for the factory workers, this course having been suggested as a possible solution of the problem that confronts this company's employes in their search for suitable near-by homes.

Bids submitted on fire hose have resulted during the past month in the following awards: Boston Woven Hose & Rubber Co., 500 feet (Urbana, Ohio); Eureka Fire Hose Co., 1,000 feet (Le Roy, N. Y.); 300 feet (Miners Mills, Pa.); Fabric Fire Hose Co., 1,500 feet (Clarksburg, W. Va.); 500 feet (Chestertown, Md.); 300 feet (Glenville, W. Va.); 300 feet (Red Lion, Pa.); 200 feet (Miners Mills, Pa.); Manhattan Rubber Manufacturing Co., 3,200 feet (Peoria, Ill.); United & Globe Rubber Cos., 5,000 feet (Pittsburgh, Pa.).

J. W. Johnson, of New Brunswick, New Jersey, formerly vice-president of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has been elected to the presidency of that company, succeeding J. Ellwood Lee, who died on April 9. Arthur A. Gaithwaite, son-in-law of the late Mr. Lee, succeeds Mr. Johnson as vice-president.

The American Can Co., 435 West 14th street, New York, is making a small compact adding machine, called the American adding machine, which it sells at a very moderate figure. It is simple and accurate and of course a great time saver.

A NOBBY TREAD OF UNUSUAL SIZE.

The United States Tire Co. some little time ago received an order from the Syracuse Rubber Co. for a special "Nobby Tread" tire for exhibition at an industrial show which was to have been held in Syracuse. This enterprise being abandoned, the company has been exhibiting the tire in its show room, where it has attracted considerable attention. It is 38 x 8 in. in size, the largest tire made, being intended for use on fire apparatus and for motor vehicles of great weight, the casing weighing 200 pounds, the tire taking a pressure of 160 pounds and being capable of carrying a weight of 4,000 pounds per tire.

STAMP MANUFACTURERS TO HOLD CONVENTION.

The International Stamp Manufacturers' Association is to hold its annual convention this year at Buffalo, New York, from June 16 to 18, the Hotel Statler having been selected as the meeting place.

THE MIDGLEY COMPANY TO MANUFACTURE TIRES.

The Midgley Tire & Rubber Co., incorporated on January 24, as previously mentioned in our columns, for the manufacture of automobile casings and tubes, has secured the factory at Lancaster, Ohio, formerly occupied by the Ohio Flint Glass Co. This factory contains 200,000 square feet of floor space and requires only slight alterations to put it in excellent shape for a tire factory, and the company expects to have its first tires on the market in September. It will make as a leader the old Midgley tread formerly made by the Hartford Rubber Works, of Hartford, Connecticut, also a regular line of casings in both Dunlop and Q. D. types. Thomas Midgley, who for the past ten years has been connected with the United States Tire Co. and its allied factories, will be general manager and have charge of production, and Harry Davis is president of the company, which is capitalized at \$550,000.

A NEW INDUSTRY FOR WINNIPAUKE.

The Norwalk Tire & Rubber Co., Inc., filed certificate with the secretary of the state of Connecticut on March 23, the incorporators being Earle Banks, John Pierce and Sayer Young—all of Norwalk—and the capitalization \$1,500,000, of which \$200,000 is said to be paid in. The stock of the company is divided into 5,000 shares of preferred and 10,000 shares of common. The principal office and place of business is at Norwalk, Connecticut, and the plant formerly occupied by the Norwalk Woolen Mills, at Winnipauk, has been secured for manufacturing purposes, at what is described by William B. Miller, president of the company, as "a very low price," this plant being equipped with both steam and water power, located on the Norwalk river and on the Danbury branch of the N. Y., N. H. and Hartford R. R. and enjoying splendid shipping facilities. This company, Mr. Miller states, "will manufacture pneumatic tires and anything else that is profitable."

Organization was perfected and certificates filed on March 28. The officers of the company are: President, William B. Miller, formerly of the Diamond Rubber Co.; vice-president, Dr. David Spence, a chemist formerly associated with the B. F. Goodrich Co.; secretary and treasurer, Frederick L. Lambson, also formerly with the Goodrich company. The board of directors, composed of seven members, includes the above three in addition to Lewis B. Arnold, of Akron—John Ingraham, William Hunter and a Mr. Deremer—all of New York. C. E. Mathewson, who on March 21 resigned his position as sales manager of the Diamond Tire Co.'s Pacific Coast branches, is said to have been appointed sales manager, while Dr. W. F. Russell, formerly employed in the chemical research laboratory of the Goodrich company, is also reported as being identified with this new enterprise. It is not expected that the plant will be in operation before the middle of May.

TRADE OPPORTUNITIES IN CONSULAR REPORTS.

A REPORT from an American consul in Great Britain states that a town council in his district has decided to spend about \$7,500 in acquiring a fire engine and equipment. American manufacturers should communicate with either the town clerk or the superintendent of the fire brigade. Information regarding this opportunity may be obtained upon application to the Bureau of Foreign and Domestic Commerce, Washington, or to any of its branches. Report No. 12,779.

A business man in a European country informs an American consular officer that he desires to be placed in communication with American manufacturers of electric cables and electric tape, with a view to importing these materials. This merchant has an office in the United States, and correspondence, in English, should be sent to said office. Report No. 12,791.

A report from an American consular officer states that a local municipality will probably ask for bids shortly on about 80 motor busses. The particulars of the contract are not yet obtainable, but bids must be filed within six weeks of being called for. As this will not allow sufficient time for particulars to be sent to the United States and bids to be returned, the consular officer will be glad to furnish particulars to any European agencies of American automobile factories that would care to submit bids. Report No. 12,800.

An American consul reports that a prominent wheelwright in a North American city is desirous of receiving from manufacturers in the eastern part of the United States catalogues and price lists of hubs, wheels, tires and other parts for vehicle construction. Report No. 12,815.

An American consular officer in the West Indies reports that he has received a request for catalogues of motor cycles, motorcycle tires and accessories. It is imperative that the catalogues contain lowest export prices. The inquirer is interested in the formation of a firm to do a wholesale business in these goods throughout the island in question. Report No. 12,832.

An inquiry has been received at an American consulate for the names of American manufacturers of pneumatic-tired sulkeys with wire wheels used for trotting and pacing horses. The inquiry was made to secure one for trial with the view to later possibly sending orders for the same. Report No. 12,859.

PROPOSAL FOR GOVERNMENT SUPPLIES.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will receive bids until May 5 for furnishing the following supplies: Schedule 6627, air hose and unlined linen fire hose; schedule 6629, flexible copper metallic hose.

INJUNCTIONS AGAINST VULCANIZER MAKERS.

The Adamson Manufacturing Co., of East Palestine, Ohio, was granted an injunction on March 24 by Judge Day of the United States District Court at Cleveland, Ohio, against the Lazarus Manufacturing Co. The decree enjoins the defendants from making or selling vulcanizers for tires or tubes embodying the principle of the Adamson vulcanizer covered by patent No. 1,057,911.

This injunction adds to a series of legal victories recently achieved by the Adamson company. On December 17, 1913, an injunction was issued by Judge Geiger of the United States District Court at Milwaukee, against the C. A. Shaler Co., restraining it from making or selling portable tire vulcanizers covered by the patent mentioned above. Again, on January 26 of the present year, Judge Dyer of the United States District Court at St. Louis, Missouri, upheld the Adamson patent as valid and signed a decree granting a permanent injunction and an accounting against the Gilliland Auto Supply Co.

New Rubber Goods in the Market.

RUBBER AS AN ARTFUL AID TO TEMPERANCE

W as frothy and frivolous, but a recent Parisian invention shows that the French are not only exceedingly ingenious, but are essentially Puritanical. This invention is nothing less than a drinking cane, intended to come to the assistance of its owner when too grievously tempted. It looks like any other plain



wood crook-handled walking stick, except that a few inches below the crook there is a little lever. But this is not the usual walking stick—far from it; for it is hollow and contains a rubber tube reaching from the ferrule to the end of the crook, which is open. By working the lever up and down a few times a vacuum is formed, and the stick is instantly converted into a siphon. When a man is invited to drink and prefers

not to, or is urged after he feels that he has had all his temperament requires, he deftly inserts the end of the crook into the seductive cocktail or the rejuvenating highball, or whatever it may be, lowers the lever two or three times, and the liquid glides smoothly and silently down into the stick. This can be repeated as often as the glass is filled, the stick having capacity for a number of drinks. When the stick becomes loaded it can be carried quietly to some unobserved place, a screw removed from the bottom, the contents released, and the cane instantly sobered up again.

The possibilities of this great invention are obvious; but, singularly enough, careful examination of customs figures fails to reveal any large importations into this country up to the present time.

SHIRTS AND SLEEVES OF RUBBER

Baseball players who at the opening of the season or in preliminary practice are required to reduce weight, find the rubber shirt an excellent aid in arriving at the desired slenderness, as



well as effective protection against muscular colds, while the use of rubber sleeves prevents the arms from becoming sore, as they otherwise so frequently do in spring training. These rubber shirts and sleeves should be worn over undergarments of worsted, which absorb the perspiration. Compared with the advantages afforded by their use, their

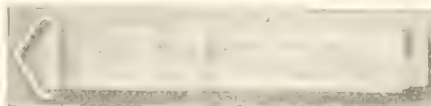
price is reasonable. A. J. Reach Co., Philadelphia.]

HEATING APPARATUS FOR WATER BOTTLES.

A patent was recently issued on an invention, the use of which in connection with the hot water bottle is bound to increase the popularity of the latter article, being a heating apparatus capable of regulation to keep the water at any desired temperature. It consists of a flexible core wound with a heating coil and surrounded by a flexible casing, which is inserted in the ordinary rubber water bottle, this device having a threaded ring which engages with the ring in the neck of the water bag in the usual manner and being supplied with means for electrical connection. The attachment for controlling the heat supply is at such distance from the water bag that it can be reached without inconvenience to the user or without any disarrangement of the coverings.

THE SANITARY ERASER.

While the rubber eraser can scarcely be said to be a new invention, the one here illustrated has the novel feature of being encased in a holder which by pressing at the loop end feeds down clean rubber until the supply is exhausted. The support of the casing permits of the use of a strip of rubber



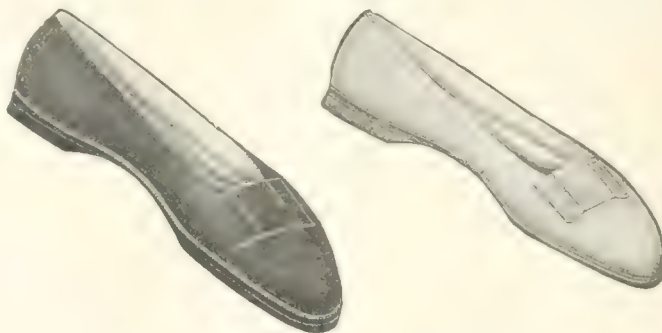
only one-eighth of an inch thick, which will erase one letter without injury to those on either side, as is liable to happen when the ordinary thick rubber eraser is used. Two rubbers of best quality are offered in this form, one for typewriter and ink and the other for pencil. [The O. K. Manufacturing Co., Syracuse, New York.]

A RUNNING-BOARD FOOT-MAT.

A rubber foot-mat inserted in the running-board of an automobile seems to serve a logical purpose, and a Boston house has recently been showing some running-boards thus equipped. The mat consists of rubber strips about 1¼ inches deep, held in upright position and kept at proper distances by corrugated aluminum separators. There are many occasions when, as one enters a car, it is highly desirable that he should clean the mud from his feet, and with this sort of running-board he can do so; and when there is no mud to clean from his feet this mat serves as a satisfactory non-slip tread. [Linscott Supply Co., Boston, Massachusetts.]

NEW GLOVE PUMPS.

The India Rubber Glove Manufacturing Co. has always been famous for the appearance and quality of its footwear. It has just added to its line two new pumps, with canvas uppers



and rubber soles. As will be seen by the accompanying cuts these are trim looking shoes, and they are made still more attractive in appearance by the ornamental bow across the vamp. These pumps are made both in white and black, and in men's sizes from 5 to 11, in women's sizes from 1 to 8, both men's and women's being made in three widths. Formerly, in the days of the decorous and orderly waltz, no one would have thought of dancing on rubber soles, but times have changed, and to do the current dances one requires a tenacious hold on the floor, which is provided by shoes like these. But apart from the Tango and the Maxixe, these shoes are serviceable in yachting and boating and for dress-up seaside occasions generally.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

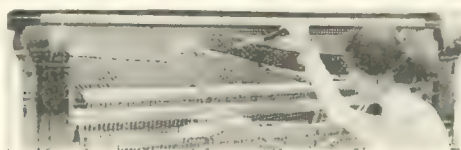
RUBBER IN THEATRICAL MAKE UP

In theatrical parts which call for enlarged heads this effect has in the past generally been accomplished by the use of a padded wig—an accessory extremely uncomfortable because of its warmth. But a decided improvement on this make-up has been devised by a young actor, *Francis Morton*, who uses in place of the padded wig a combination of rubberized silk bags inflated with cooled air. The illustration herewith shows one of these rubberized bags in use, with wig attached, and another in position to form fat cheeks and double chin, the edges of the bag being joined around the eyes, nose and mouth with spirit gum, and the size of the features to be inflated by a draw string which controls the amount of inflation. Nose paste, coloring matter, beard, etc., are then added, to complete the effect called for by the role to be enacted.



THE TUNE-A-PHONE

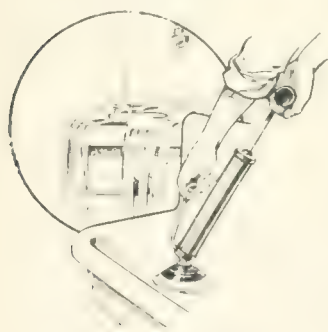
In the correspondence course of instruction in piano tuning now being offered by an established school, incorporated under the laws of the state in which it is located, the use of the Tune-a-Phone plays an essential part. This is a duly patented device, and, as shown in the illustration, it is provided with



rubber tubes which extend from the instrument to the ears of the learner. It is not intended as a permanent requirement but may be dispensed with after the course is completed, being intended for purposes of demonstration where correct impressions cannot be conveyed by correspondence. [Niles Bryant School, Art Inst., Battle Creek, Michigan.]

A LIFT AND FORCE PUMP WITH RUBBER PARTS

This pump is not extremely new—as a matter of fact it is in use quite extensively—but it is an interesting little device, and depends largely for its success on its various rubber parts. It is a lift and force pump for cleaning out stopped-up kitchen sinks, wash basins, bath tubs, lavatories, etc., and does this work very effectively, tho it is quite an inexpensive apparatus, not costing very much more than it does to have the plumber in for a few minutes. The cylinder is made of brass, but molded rubber is used for the lift and force cup, and for the adjustable washer. [The Little Giant Household Pump Co., Philadelphia, Pennsylvania.]



LIFT AND FORCE PUMP

In selling rubber hot water bottles it is suggested that the customer be advised to use a funnel when pouring very hot water into the bag, thus preventing the water from striking it at the neck, which is where the first leak usually occurs. The

sides of the bag should also be prevented from sticking together, as often happens when put away damp, by being inflated with air.

GASOLINE MOTOR TRUCKS

According to reliable estimates, there are now approximately 85,000 gasoline trucks being used in the United States. Nor is this mere guesswork. The number in 1910 was 10,374. Combining with this figure the output of 1911 of 8,500 and that of 1912 of 27,900 a total is obtained of 46,774. By adding the estimated production of 1913 of 40,000, an approximate total is obtained for the present time of about 85,000 trucks. Some estimates place the number as high as 100,000. At any rate, the production for 1913 was apparently almost equal to the number in use at the beginning of that year.

There are estimated to be about 274 concerns engaged in the manufacture of gasoline trucks in America. Sixty of these produce 90 per cent. of the trucks made, while the remaining couple of hundred are small makers, with an average output of only 15 to 20 trucks a season. The states with the largest numbers of truck manufacturers are: Michigan, 41; New York, 36; Ohio, 32; Illinois, 25; Pennsylvania, 19; Indiana, 12; Wisconsin, 11; Missouri, 10; California, 8. Thus 194 factories out of 274 are divided among 19 states.

By a recent canvass of the truck manufacturing industry on the part of "The Automobile," the year 1913, in spite of industrial retrenchments, was shown to be a satisfactory one for the motor truck industry. The experience of 60 leading firms showed gains of from 12 per cent. to 600 per cent.

In no instance has any decrease been reported. One company building 6 models had a 30 per cent. increase as compared with 1912, while another which makes a single model in quantities above 1,000 reports an increase of 70 per cent. over the preceding year. A Pacific Coast manufacturer records 100 per cent. increase and two Michigan concerns have augmented their business, respectively, 25 and 50 per cent.

The following 20 cities, in the order named, were the largest consumers during 1913 of the trucks made by 100 manufacturers:

New York, Chicago, Boston, San Francisco, Los Angeles, Buffalo, Pittsburgh, Philadelphia, Cleveland, Kansas City, St. Louis, Portland (Oregon), Milwaukee, Seattle, Toledo, Cincinnati, Indianapolis, Rochester, Minneapolis and Detroit.

Some of the less populated cities have evidently been extending the use of motor trucks for the delivery of household goods in residential quarters.

The industries which have been the largest users of motor trucks have been in the first place general trucking, followed by the wholesale and retail grocery and produce trade. Other heavy purchasers of trucks have been breweries, liquor dealers, coal and ice companies, oil concerns and public utilities.

The popularity of solid tires for motor trucks is exemplified by the fact that out of 306 specifications for 1914, published in "The Automobile," all except about 40 include solid tires.

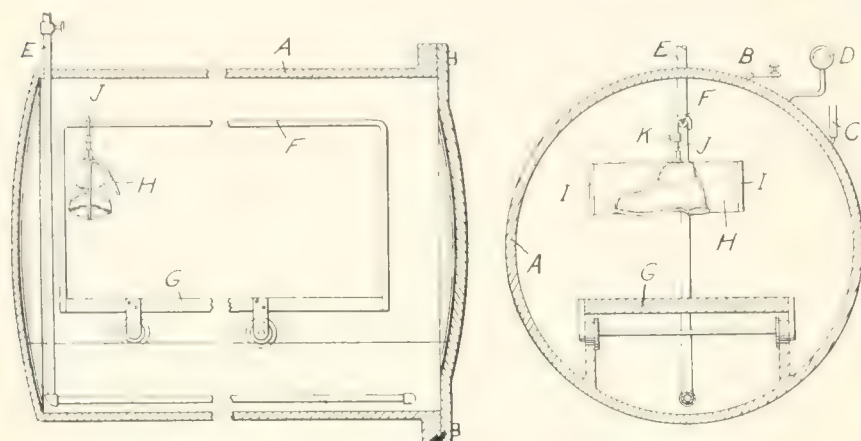
THE RUBBER TIRED MOTOR TRUCK TO REDUCE THE COST OF FARM PRODUCE.

That a reduction in the cost of farm produce to city dwellers within the next few years is possible and not entirely improbable is the prophecy made by C. W. Martin, manager of the motor truck tire department of the Goodyear Tire & Rubber Co., of Akron. This expectation is based on the advantages which the motor truck affords the farmer for the profitable marketing of his produce over the old method of horse-drawn vehicles, and the availability, through the adoption of this plan, of a much greater source of supply. Mr. Martin cites, as an instance of how firmly this mode of produce marketing has become established, the formation in the west of a truck club, the intention of which is to operate a line of motor trucks in competition with the railroads, claiming ability to give better service at a minimum cost.

New Machines and Appliances.

A NEW METHOD OF VULCANIZING FOOTWEAR.

THE dry heat process is the one in common use for vulcanizing footwear and similar rubber goods, and the time consumed is from 6 to 8 hours. The trouble with the dry heat process, where air is confined with the rubber goods, is the oxidizing which takes place. Again, with the open steam process, employed chiefly in making mechanical goods, the moisture has a bad effect upon the fabric lining and also injures the rubber sur-



ILLUSTRATING THE HILL METHOD OF VULCANIZING FOOTWEAR.

face by causing it to be pitted. Those processes which utilize certain gases under pressure to drive out air are often expensive.

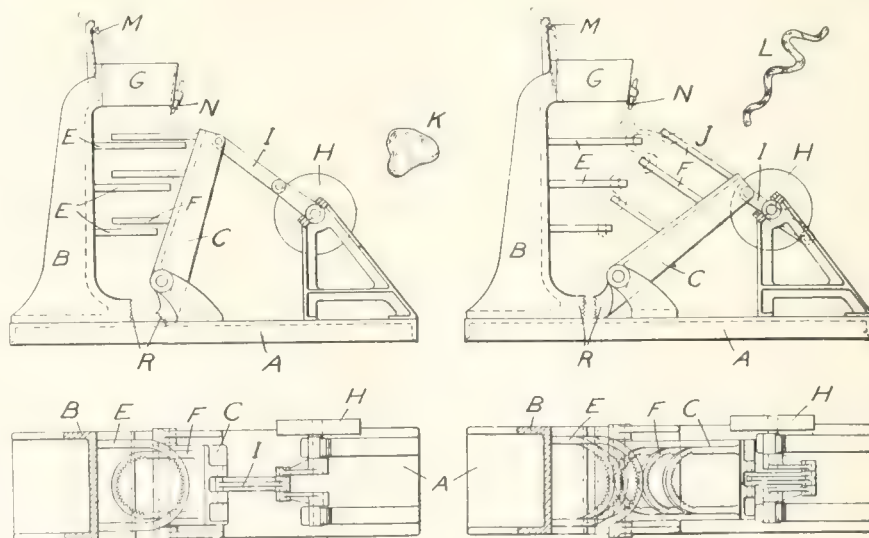
According to a new invention, which is illustrated herewith, the objectionable features in the processes mentioned above are eliminated. By this new process the oxygen of the air is excluded almost entirely from the goods while they are being vulcanized. The feature of this invention is a thin rubber and fabric envelope which fits over the shoe, and from which the air is extracted to make it conform to the outline of the shoe. Referring to the drawings, which show a longitudinal and a cross section of an ordinary steam cylinder vulcanizer, *A* represents a vulcanizer provided with an escape valve *B* to allow the escape of air as the steam enters. The usual thermometer *C* and steam gage *D* are also provided. The steam enters at *E* and condensation is taken care of in the usual manner. The rubber shoes to be vulcanized are placed on the lasts and suspended by hooks on a rod *F* of the roller carriage *G*. With this new process the shoe is placed on its last and enclosed in a thin envelope *H*. This is closed at the ends by means of metal clamps *I*; and the opening in the top, which allows the pipe *J* to pass through, is closed by means of a washer clamped tightly against the envelope by means of a set screw or nut fitting around the pipe. When the envelope is thus tightly sealed the valve *K* is opened and the end of the hooked pipe *J* is connected with an air pump and the air extracted from the envelope through a hole in the lower end of the pipe inside the envelope. As the air is extracted the operator smooths the envelope out to remove wrinkles, so that it conforms exactly to the outline of the shoe, and so that the line where the two sides of the envelope meet will lie along the center line of the shoe. When a vacuum of 21 inches, or 10 pounds pressure,

is obtained the valve *K* is closed. When the rod *F* of the carriage is filled with rubber shoes, thus prepared and suspended on the rod *F* by the hooked pipes *J*, the carriage is run into the vulcanizer and the door is closed. The thin rubber and fabric envelopes allow the shoes to be surrounded by live steam, but prevent the rubber from coming in direct contact with the steam. They also exclude the oxygen of the air and prevent oxidizing of the rubber. By this method the shoes are vulcanized in about two hours. [U. S. Patent No. 1,090,535, granted to Wm. G. Hill and assigned to the Apsley Rubber Co., Hudson, Massachusetts.]

AN INNOVATION IN RUBBER WASHERS.

Except in those cases where tub washers are used, crude rubber containing sand, dirt, etc., is passed between the crushing rolls of the ordinary roll washer without preliminary treatment, to remove the foreign matter. The machine illustrated in the accompanying drawings, and which has just been patented in this country, is of somewhat unusual construction. Upon the bed plate *A* are mounted two frames *B* and *C*. The former is rigidly attached, while the latter is pivoted at its lower end. Each of these frames has a series of jaws *E* and *F* extending towards each other as shown. These jaws are U-shaped and are provided with teeth as shown in the plan views of the machine.

When the frames *B* and *C* are at their minimum distance apart, as shown in the first drawing, the toothed portions of the jaws *E* and *F* form opposite sides of an almost circular passage through which the rubber descends from a hopper *G* in the upper part of the frame *B*. When the frame *C* is set in motion, by means of power applied to the pulley *H* and communicated to the frame through the connecting rod *I*, the jaws *F* are forced back as indicated at *J*, so that a lump of rubber of the shape



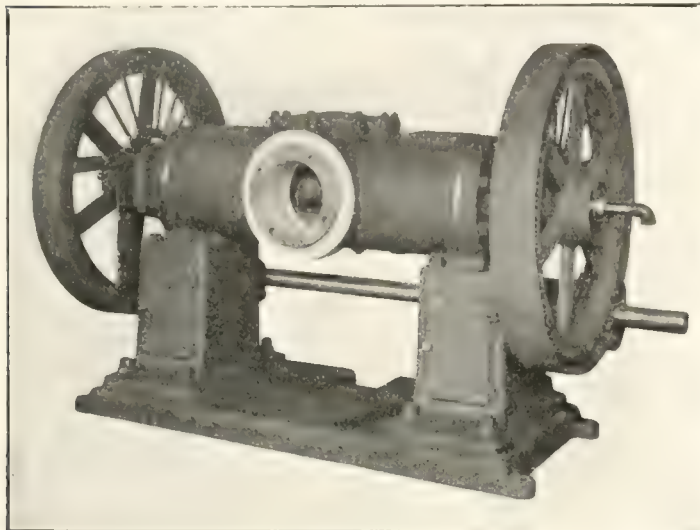
THE LATEST TYPE OF RUBBER WASHER.

shown at *K* will be stretched into a thin and corrugated sheet as indicated at *L*. As the crank shaft continues to revolve, the rubber sheet becomes thinner as it descends between the jaws. During this operation water is impinged against the rubber from nozzles *M* and *N*. At the lower ends of the frames *B* and *C* are corrugated jaws *R*, which are opened and closed by the move-

ment of the frame *C* and act to crush the rubber after it has passed through the stretching jaws *E* and *F*. The action of the machine tears the rubber so as to free the foreign matter, which is then easily washed away by the water running over it from above. [U. S. Patent No. 1,089,162, granted to William R. Smith, of Buffalo, New York.]

THE ALLEN DOUBLE TUBING MACHINE.

The Allen Double Tubing Machine made in Erie, Pennsylvania, by the Allen Machine Co., possesses many features which commend it to the appreciation of rubber manufacturers. Among the merits claimed for it is the omission of the end thrust, and also that its use makes possible a 100 per cent increase in output



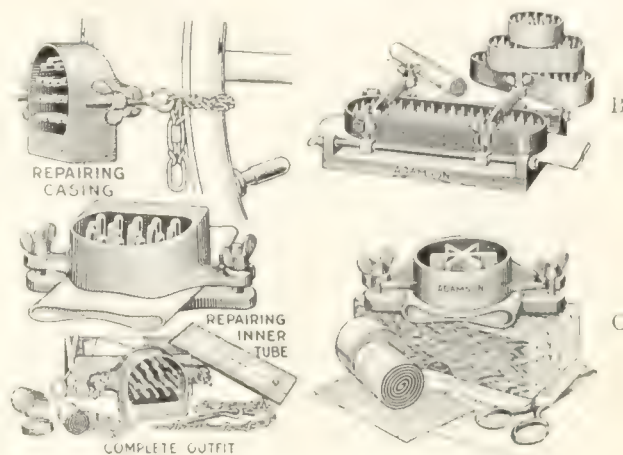
DOUBLE TUBING MACHINE.

per cylinder bore over any single-type machine. It is further claimed that the Allen tubing machine shows greater output per horsepower. The worm of this machine is cut from a solid steel forging, is bored for water circulation and is guaranteed to have fewer defects than could possibly be the case were an ordinary casting used.

VULCANIZERS FOR THE CAR OWNER.

Three different styles of vulcanizers for the repair of tires and inner tubes are shown in the illustrations herewith. These repair outfits represent the type of vulcanizer which was first introduced about two years ago, and which has found a wide use in garages and among automobile owners who do their own repairing. The first illustration, *A*, shows a complete outfit for repairing both casings and inner tubes. To use this vulcanizer the cup is attached by means of the chain or clamp, according to whether a tire or tube is to be repaired, and gasolene is poured into the cup to a certain depth according to directions. The gasolene is then lighted and allowed to burn itself out. The amount of fuel is calculated so that the time required to consume it will ensure complete vulcanization. With this outfit a quantity of repair gum, measuring cup, shears, emery paper, etc., are supplied. Another style of vulcanizer operating on the same principle, is shown by *B*. This outfit is designed for the repair of inner tubes. Four different sizes of cups are supplied for attachment to the adjustable clamp, and cuts up to 12 inches in length may be repaired in 15 to 20 minutes. The projections cast in the bottom of the cups serve to conduct heat from the burning gasolene to the vulcanizing plate at the bottom. A third style of vulcanizer, shown by *C*, is designed especially for repairing motor cycle and cycle-car tubes, as well as the smaller sizes of tubes such as are used on Ford cars. The principle of

operation is the same as in those described above. The repair gum is placed over the cut on the tube, the vulcanizer is clamped



THREE STYLES OF THE ADAMSON VULCANIZER.

in place, and gasolene is poured into the cup and lighted, thus effecting the cure in about 15 minutes. [Adamson Manufacturing Co., East Palestine, Ohio.]

FORD WILL CONSERVE MORE WASTE ENERGY

Only a few weeks ago Henry Ford, the world's most famous automobile manufacturer, startled the industrial world by the announcement of his intention to share the profits of his business with the employes of the factory. Manufacturers and others interested in the automobile trade were not through discussing the *pros* and *cons* of this revolutionizing plan when Mr. Ford made another announcement which is equally as surprising and which, if the experiment proves a success, may result in a radical change in the development of power in all plants which are operating under the present inefficient systems of power development.

This time Mr. Ford announces that he will spend \$1,000,000 in the erection of a new power plant and in the installation of a new type of engine. He proposes to harness steam power and gas power together in a gigantic set of units and thereby convert the energy which at present goes up the chimney into useful work. The new power units will comprise three large gas engines, the waste heat from which will be used to develop steam to operate a fourth engine. These four engines will cost about \$600,000, and each will develop 7,000 horsepower. The new power station will cost \$150,000, and the steam generators will cost \$250,000, bringing the total expense of the new experiment up to the million mark. The effect of developing steam from the waste heat of the gas engines and converting this steam into useful energy is the same as if the waste heat developed in the radiator of the automobile were used to do some practical work.

It is reported that the new engines are to be built by the Crocker-Wheeler Co., of Ampere, New Jersey, and some idea of their enormous size may be gained from the fact that it will be necessary to build them in sections so that they will clear the bridges and tunnels on the railway lines over which they will be shipped to the Ford plant in Detroit.

The increased power which will be realized with the installation of this new plant is made necessary because of many additions to the Ford factory, and also because of the termination of relations with Dodge Bros., who have held contracts for making certain parts of Ford motors for many years.

This development of the Ford factory means that there is to be no decrease in the production of cars, and it may even mean a greatly increased output after the installation of the new units. This, of course, means more tires and a greater consumption of rubber.

The India Rubber Trade in Great Britain.

By our Regular Correspondent.

NEW WORKS.

DURING March a somewhat lengthy report was published in a Manchester paper to the effect that the Leyland and Birmingham Rubber Co. had bought the new but never used works of the Bradford Dyers' Combine at Handforth, Cheshire, for the purposes of a branch factory; and the importance of this new industry to a rural district was pointed out in glowing terms. Now, as far as the Leyland company is concerned, the report is erroneous, as they have no intention of starting another factory. The real facts of the case are that T. H. Roberts, chairman of the Wood-Milne Co., Limited, of Leyland, in association with some of his friends, has arranged to finance the manufacture on a large scale of a product invented by Robert Russell and developed by Mr. Metcalfe, of the Maroro Rubber Works, Brimscombe, near Gloucester. This product is variously referred to as synthetic, artificial and reclaimed rubber—terms which, of course, are by no means synonymous.

In the absence of authenticity as to the sample I have inspected, I shall not on the present occasion say more than that if it was really made from wood, the discovery and manufacture are likely to prove of the very highest importance. A report has been sedulously circulated to the effect that Charles Macintosh & Co. are largely interested in the new venture, but this I am authoritatively informed is not the case. The works which Mr. Roberts has taken, and the price of which is stated to be £73,000, are situated about fourteen miles from Manchester and are quite extensive, being nearly one-quarter mile long by 90 yards wide; and altho employment will not be found for 600 rubber workers, as foreshadowed in the press, yet they will of course add to the commercial importance of the district. As it seems to be supposed by many people that this new concern is in connection with the Synthetic Products Co., Limited, with which Professor Perkin and Sir W. Ramsay are associated, I may say that there is no connection whatever between the two concerns.

PERSONAL MEN.

Mr. Walter Wild, who has for some years been works manager for the Wood-Milne Co., Limited, at Leyland, has resigned his position and is at present engaged in an agency business of his own for raw and reclaimed rubbers, a branch in which he has previously had considerable experience.

Mr. James Tinto, managing director of the Irwell and Eastern Rubber Works, Limited, Manchester, has returned from an extended business trip through the United States and Canada. In the course of a few observations he said that there was practically no difference between the machinery made and used in America and that to be seen in British works; where the Americans had an advantage was that their buildings were mostly of one story, and that the factories had plenty of ground in reserve whereby extensions could be cheaply made; that with the majority of British works, situated in urban areas, any extension was apt to prove a costly matter, the price of the adjacent land being in many cases prohibitive even if negotiations could be entertained at all.

Mr. F. J. S. Gray, late works manager of the Gorton Rubber Co., is at present on the traveling staff of the St. Helens Cable & Rubber Co., Limited, of Warrington. Mr. Gray has an intimate knowledge of rubber manufacture, having gone to the Gorton works from the Aston Cross works of the Dunlop Rubber Co., where he was under-manager for fourteen years. E. S. Gray, his brother, is now under-manager at the works of the Rubber Regenerating Co., Limited, Trafford Park, Manchester. He was manager for the Mersey Reclaiming Co., Limited, of Stockport,

until the fire of about a year ago put an end to that business. He had previously had experience in reclaiming in America.

Hampson Brothers, Limited, of Clayton Lane, Manchester, are now making a specialty of machinery for rubber manufacturers and plantations. The name will be familiar to many in the rubber trade, as their late father was for many years managing director of the Castle Rubber Co., Limited, of Warrington.

Lieutenant-Colonel T. A. Fallows, T. D., has been appointed commanding officer of the Eighth Lancashire Fusiliers (Territorials). In business life he is well known in rubber circles, as commercial manager of the Leyland and Birmingham Rubber Co., at the Leyland works.

GORTON RUBBER WORKS.

These works were sold piecemeal by auction on April 1 and 2. The 335 lots attracted a large number of buyers, and satisfactory prices were generally obtained. A good deal of the machinery was of quite recent erection; but, making all allowance for this fact, the prices obtained in most cases were surprisingly good, the buyers being rubber machinists who were present in force. Those who went from rubber works to pick up bargains expressed themselves as disappointed with the sale. The proceeds are hardly likely to cover the debentures fully, and there is no prospect of any return to the shareholders.

RUBBER LITERATURE.

"Rubber, Its Sources, Cultivation and Preparation," by Harold Brown, technical superintendent of the Imperial Institute, London, has a preface by Professor Wyndham Dunstan, who reiterates his opinion that plantation rubber which can be profitably sold at less than 2s. per pound has little to fear from the competition of the synthetic material. This book will be found useful by a good many people who wish to be up to date with regard to the sources of raw rubber. A special feature is the copious reference to West Africa, where the native collectors in the French colonies are receiving instruction either in "Rubber Schools" or by traveling instructors. Improved methods of exploiting the *Landolphia* find specific reference. The author does not give any decided personal opinion with regard to the debated question as to whether the vines should be tapped or whether they should be cut down and left to reproduce themselves in three years. The matter, it is said, is now under special notice in the French Congo, where the merits of the alternative processes will be decided. When this comes to pass, the vines, he surmises, will have ceased to be of much interest as a source of rubber.

With regard to plantation Pará, it is pointed out that chemical analysis fails to distinguish between rubber from young trees and that from old ones, tho that from the former is usually much weaker. This authoritative statement should be taken to heart by those chairmen of plantation company meetings who announce triumphantly that their chemists have found no difference between the plantation product and Fine Hard.

FIRES AT WORKS.

One of the largest fires ever known in the Manchester district occurred on Sunday, March 29, at the tar distilling works of Hardman & Holden, Limited, damage to the extent of £80,000 being done. The firm is one of the largest producers of solvent naphtha in the country. On April 2 much damage was caused by a fire at the works of the British Pluviusin Co., Limited, at Minton Green, near Manchester. The main product of manufacture is an artificial leather made with oils, rubber, acetone, benzine, etc., and the fire is said to have been caused by the sun's

rays. The company is closely connected with the old Winterbottom Book Cloth Co., of Manchester, and also has a branch in New York, called, I believe, the Fabrikoid Works.

THE PROPOSED LONDON RUBBER TRADE WAREHOUSE

In connection with the proposed rubber trade warehouse for London, it has been estimated that the present warehouse charges on rubber arriving in London (excluding port charges) amount to about \$14.50 per net ton, this being much in excess of the cost of handling the article in Liverpool and the chief foreign ports. It is expected that the quantity to be dealt with will be about 50,000 tons a year.

To encourage using the warehouse, it is proposed to distribute 25 per cent. of the surplus profits, after paying 8 per cent. on the shares, between the shareholders and the customers of the company. Encouragement and support from the rubber trade are anticipated as a consequence of this new departure in London rubber customs.

PRIZES AT THE LONDON RUBBER SHOW.

VALUABLE MEDALS FOR THE BEST RUBBER SOLES.

THERE is one competition connected with the London Rubber Exposition to be held from June 24 to July 9 next, which ought to interest a good many American rubber manufacturers, as it is a competition in the making of rubber soles. Three medals—gold, silver and bronze—together with the exhibition diploma, are offered by the Rubber Growers' Association for "the best specimen of rubber soles that can be attached by simple means to any kind of new or worn footwear." And here are the

CONDITIONS OF THE CONTEST

1. The proportion of new rubber contained in the soles must be stated.
2. The price these soles of various sizes can be sold at, retail, must be stated, and successful competitors must be prepared to supply them to retailers, to enable them to sell at the prices stated.
3. The methods of attaching the soles in the course of manufacture of the boots or shoes, shop fixing, or affixing to worn footwear, must be stated, i. e., directions given as to whether soles must be sewn, cemented or otherwise fixed to ensure their adhering properly and permanently.
4. In making the awards the judges will take into consideration the following points:
 - a. Cost (combined with quality) to the public.
 - b. Simple and permanent method of attaching to footwear.
5. There will be no entrance fee, and the necessary space and stand will be supplied free. During the Exhibition the competitions are under the sole control of the Exhibition Awards Committee.
6. All exhibits must be delivered, carriage paid, with the name of the competitor attached to the package containing the exhibit, as well as to the articles themselves.

Entries will close on the 1st of June next, tho exhibits will be received up to June 15. Application for entries should be sent to the Awards Committee, care A. Staines Manders, Exhibition Offices, 75, Chancery Lane, Holborn, London, E. C.

A GOLD MEDAL FOR THE BEST TROPICAL AGRICULTURAL MACHINERY.

The "Journal d'Agriculture Tropicale," of Paris, offers a gold medal for the best collection of machinery or implements necessary for the cultivation or preparation of tropical products, or for the manufacture of the raw products; or for labor saving appliances that would prove of benefit to tropical planters.

A SILVER CUP FOR THE BEST FACTORY PLAN.

The "Gummi Zeitung," published in Berlin, also offers a prize in the form of a large silver cup—illustration of which is here shown—for specific plans and illustrations of a medium-sized, modern rubber manufacturing plant intended for a varied

production. The plans must show the installation of the various machines for the treatment of crude rubber, as well as for the manufacture of rubber goods; and it is hardly necessary to add that the plan must be in accordance with the latest principles of factory construction and hygiene. A technical description of the machines may be given, but the names of their manufacturers must be omitted. The specifications under this



"GUMMI-ZEITUNG" SILVER CUP.

contest should be submitted not later than May 15, and should be sent to Mr. Manders at the address before given. The award will be made at the opening of the conference—to be held in connection with the exhibition—on June 30. The jury of award in this contest will consist of two members of the editorial staff of the "Gummi Zeitung," one prominent rubber scientist and one manufacturer.

WICKHAM HARD CURE RUBBER PATENTS, LTD

A company under the above style was lately registered in London, with a capital equaling \$80,000. The objects include the purchase from Mr. Wickham, of a license to work his invention for the production of a "hard cure" rubber from plantation latex, the acquiring of rubber, gutta percha and other plantations and the application of this treatment to the latex obtained.

RUBBER PAVEMENTS

Reports from London continue to record satisfaction with the experiments in rubber pavements, the section laid by Mr. Dessau at the junction of the Old and New Kent Roads having proved a great success. Though it has been in use since the beginning of last August and subjected to heavy traffic, the blocks are in as good condition as when put down. It is expected that next year some of the principal London thoroughfares will be covered with this system of road paving.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude and Compounding Ingredients."

Some Rubber Interests in Europe.

CONTINENTAL CAOUTCHOUC AND GUTTA PERCHA CO., HANOVER.

THE report of the above company for the year 1913 records the exceptional movements of rubber during the year, presenting the following estimates of the world's consumption of rubber during recent years: 1908-9, 71,080 tons; 1909-10, 76,026 tons; 1910-11, 74,082 tons; 1911-12, 99,364 tons. It is added that notwithstanding the increased consumption shown as above, the future of the article is hard to predict, owing to the largely augmented imports of plantation rubber.

While Southern Kamerun has felt the effect of the low prices, it is hoped through the proposed reduction of freights and the eventual removal of the export duty to still market the rubber of that district to advantage.

Business was again extremely active in 1913, the company's turnover having largely increased, while selling prices have fallen. Night work had to be resorted to during a great part of the year in order to keep pace with demand. Ground has been secured for the erection of workmen's dwellings, while possession has been taken of the new business premises at Dresden and Munich.

The affiliated companies have been doing well, those of Paris and London paying 10 per cent., while those of Stockholm, Copenhagen, Bucharest and Milan have each distributed 5 per cent. At Paris a new factory has been erected for the production of goods hitherto imported, and involving an increase of capital by the equivalent of \$200,000 to \$600,000. To meet the development of the Australian trade, a new factory is likewise being erected at Sydney. Recent changes in the tariff have improved the prospects of the American trade.

The detailed accounts show gross profits, \$3,092,285; net profits, \$2,188,396.

THE NETHERLANDS RUBBER INDUSTRY.

There are in Holland eight rubber goods factories, of which five are somewhat important, altho the total number of workers is said not to equal that of an average-sized German plant. These factories supply only a part of the country's requirements. While this condition is partially due to the low import duty—5 per cent.—it is likewise attributed to the lack of enterprise on the part of Dutch manufacturers. Owing to the keen competition of foreign makers, domestic manufacturers have to sell with very small profits.

Among the principal Netherlands imports of rubber manufactures are balls, surgical goods of hard and soft rubber, water-proof raincoat materials, rubber shoes, etc., which are not made in Holland. Automobile tires are not yet made to any extent in Dutch factories. It is only within the last few years that some concerns have been trying to introduce an up-to-date tire.

Suggestions have been made for the erection in Holland of a modern factory for home and export trade. The American exports to that country for the fiscal year 1912 included: Belting, packing and hose, \$3,830; boots and shoes (7,658 pairs), \$3,442; tires for automobiles, \$405; other tires, \$100; other rubber goods, \$42,810. Total, \$50,587.

CHANGE AT HANOVER SEPARATOR WORKS.

Herr Heinrich Bormann has retired from his position as one of the business managers of the Hanover Rubber Separator Works.

NEW RUBBER DEALERS FIRM AT STOCKHOLM.

Herr G. Langborg has opened a dealers' and agency business in rubber goods at Stockholm under the registered firm names of "Gunnar Langborg, Amerikansk Gummi-Import" and "Good-year's Generalagentur, Gunnar Langborg."

TO PREVENT LOWER PRICES FOR RUBBER GOODS.

At the annual general meeting of the United Harburg-Vienna rubber factories, it was decided to convene at an early date a meeting of delegates of rubber manufacturers to investigate the steps necessary to arrest the fall in the price of rubber goods. This reduction, it was stated, exceeded the proportionate drop in crude rubber prices.

WITH THE NORTH BRITISH RUBBER CO. 6,322 YEARS.

Here is a group picture including about 180 people who have been with the North British Rubber Co. for 6,322 years—not individually, but collectively. But they have all been with the company individually at least twenty-five years (tho some of the girls don't look it). In the group there are nine people each of whom has had over 50 years' continuous service, aggregating 535 years for the nine, and forty-three with over 40 years' service, or an aggregate of 1,919 years. Two of the women shown in the first line have been with the company each 57 years, and seven of the men in the second line have worked in this factory for terms running from 50 to 56 years.



180 MEN—ALL OF WHOM HAVE BEEN WITH THE NORTH BRITISH RUBBER CO. OVER 25 YEARS.

THE RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

JAPANESE MEDICAL RUBBER TUBING TRUST.

THERE are now five manufacturers in Japan of medical rubber tubing—Ingram Rubber Manufacturing Co., and the Kobe Rubber Manufacturing Co., Kobe; Chiyoda Rubber Co., Limited, and Kume Rubber Works, Tokio, and Kamenofuchi Rubber Works, Hyogo—their joint output being some five times that of the Ingram company, established in 1908. Japanese consumption has proved inadequate to absorb this increased production and the price gradually dropped from yen 13.50 per kilo (about \$3 per pound) to yen 6.50 per kilo (about \$1.50 per pound). At such a price the production of new goods has of course been impossible and it has been accepted only to clear off surplus stocks.

Under these circumstances it has been found necessary to establish the "Tohan Rubber Trading Co.," a partnership formed in February, 1914, by the five medical rubber tubing manufacturers, their agencies and nineteen traders in that branch. The project is for the five manufacturers to sell their tubing only to the trading company, directly or indirectly, the present surplus being cleared off and production reduced by two-thirds. These steps, it is anticipated, should cause the recovery of the market price to its former position.

By latest quotation the price as established by the Tohan Rubber Trading Co. is yen 9 per kilo (about \$2 per pound).

JAPANESE CRUDE RUBBER IMPORTS.

From—	1912.		1913.	
	Pounds.	Value.	Pounds.	Value.
Straits Settlements...	1,214,485	\$820,891	1,657,265	\$885,602
British India.....	167,063	140,781	340,343	239,281
Dutch India.....	124,904	73,171	13,928	8,908
Great Britain.....	242,620	230,663	440,802	408,865
United States.....	158,176	160,556	139,624	100,112
Other countries.....	96,782	88,495	89,981	83,154
Total	2,004,030	\$1,514,557	2,681,943	\$1,725,922

The increase shown above, of about 33 per cent. in quantity of crude rubber imports, has been attributed to the augmented Japanese manufacture of bicycle tires as well as to the natural growth of demand stimulated by the low prices current last year, which induced speculative operations in rubber.

PRINCIPAL JAPANESE IMPORTS OF RUBBER GOODS.

	1912.		1913.	
	Pounds.	Value.	Pounds.	Value.
Soft and other rubber goods	1,543,281	\$537,663	1,087,400	\$418,028
Automobiles and parts. ....	.....	223,598	.....	555,023
Bicycles (number)....	15,540	212,317	14,870	417,525
Bicycle tires.....	491,994	556,677	428,980	519,498
Other bicycle parts... ..	.....	576,708	.....	649,616
Insulated wire and cables .....	.....	2,797,418	.....	1,031,260
Rubber boots.....	.....	21,478	.....	25,707
Overshoes .....	.....	21,019	.....	17,737
Waterproof tissue....	27,365	21,636	29,590	22,090
Elastic webbing, etc.. ..	.....	83,544	.....	49,123
Insulating tape.....	245,756	76,156	185,009	57,470
Woven belting and hose for machinery.	352,114	147,601	605,676	280,392
Total .....	.....	\$5,275,815	.....	\$4,043,469

The effects of the new tariff, which went into force on July 17, 1911, are apparent in the considerable decrease in the value of imports of rubber goods for 1913 as compared with 1912, amount-

ing to about one-fourth, and representing the development of Japanese production. In the imports of insulated wire and cables there is a notable decrease, caused by the depressed condition of the Japanese electric industry last year and the surplus production of domestic makers.

As bicycles are constructed in Japan from imported parts, the imports of the latter show an increase, while the augmented imports of automobiles and parts represent the present large demand in Japan for the article. The enlarged manufacture of bicycle tires is illustrated by the reduced imports as shown.

RUBBER NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

ABOUT three years ago Mr. Henry Daley, then manager and local attorney of the Essequibo Rubber and Tobacco Estates, Limited, which corporation is now defunct, advocated that the Venezuelan or felling method of bleeding balata trees should be resorted to in this colony, in place of the existing system of tapping the standing trees. The proposal engendered much controversy, in the course of which Mr. Daley produced some interesting figures in support of his contention that it would be more profitable to government and licensee alike to cut down the tree and tap it once and for all rather than tap it at long intervals of about five years, and that only over half the circumference of the tree, as prescribed by the Crown Lands Regulations. He estimated that there are 5,000,000 balata trees in the colony, but admitted that this was only a guess. He suggested that a felled tree would yield 40 pounds of balata. Thus he estimated that the cutting down of all the balata trees in the colony would yield 200,000,000 pounds of balata.

In return for the concession of being allowed to cut down the trees he suggested that licensees should pay a royalty of 12 cents per pound, instead of 4 cents as at present, thus returning to the government \$24,000,000. He judged that it would take 5,000 men 26 years to cut down and tap these 5,000,000 trees, the government thus getting nearly a million dollars a year in royalty, instead of \$40,000 a year. The government at the time refused to grant the desired concession, and the controversy died a natural death. The new governor, Sir Walter Egerton, however, on the principle, apparently, that the proof of the pudding is in the eating, instructed his officers to experiment, with a view to ascertaining the relative values of the two methods. These officers have reported the result of their experiments, and their report reveals that the government would have been a heavy loser by permitting the wholesale destruction of the trees, and that the licensees would have been heavy losers by agreeing to pay 12 cents royalty instead of 4 cents, for the experiments have shown that the yield of a felled tree is not 40 pounds, but barely one-tenth of that amount.

THE NATURE OF THE EXPERIMENTS.

One series of experiments was conducted by C. K. Bancroft, Assistant Director of Science and Agriculture, and S. H. Bayley, superintendent of the Industrial School at the Indian Reserve, situated at the back of Onderneming School farm. The trees were growing in the forest, and were all "virgin" trees, not previously bled. They covered an area estimated at 5 square miles, and extended to 3½ miles beyond the back of the farm. Bleeding was commenced as early as possible in the morning, a greater yield being obtained at that time than during the heat of the day; and in the case of trees where latex was extracted after felling, the felling was done late in the evening and the bleeding carried out the next morning. The bleeding was conducted by a skilled bleeder of some 20 years' experience. Twenty trees were employed, grouped into four lots—A, B, C, D numbered M1, M2, B1, B2, etc. The girth of the trees was taken at 4 feet from the ground, the standard length adopted

by the Lands and Mines Department for measuring the girths of the trees, and the distance from the lowest cut on the tree to the fork was measured. The experiment was divided into the following classes: A—trees bled by a cutlass, employing the feather-stitch pattern of cutting on one-half the circumference of the tree, as at present in use in the colony; B—trees felled and bled by the method employed in Venezuela, at right angles to the axis of the trunk, each tree being felled at three feet from the ground so that its trunk remained propped on the cut end of the stump, in order to facilitate bleeding and collecting on the lower part of the trunk, the method described by Jumelle being followed as closely as possible. Trees were also bled by means of V-shaped cuts with a common vertical channel and by means of the herring bone system, but these systems were abandoned at an early stage of the experiment as they appeared to yield considerably less than the other two systems. By methods A and B the approximate yield of dry balata per square foot of bark bled was: A—local method, 45 ounces; B—Venezuelan, 25 ounces.

EXPERIMENT TWO.

It was then decided to experiment by bleeding standing trees round the whole circumference, and by bleeding felled trees. Fourteen trees were used for this experiment. Five trees bled by the Venezuelan method yielded 14 pounds 2½ ounces, or 2 pounds 132/10 ounces per tree; five trees bled standing, round the whole circumference, by the feather-stitch pattern, yielded 15 pounds 5 ounces, or 3 pounds 1 ounce per tree; four trees bled standing, round half the circumference, yielded 7 pounds 11½ ounces, or 1 pound 147/8 ounces per tree. Calculated on the basis of bark bled, the results were: Venezuelan method, 25 ounces; whole circumference, standing, 35 ounces; half circumference, 66 ounces.

EXPERIMENT THREE

In these two experiments the trees were only bled as far as the main bark, but in their report the officers add: "It was obvious that the cuts could be extended above the main bark of the tree on the lower part of the branches both in felled and in standing trees." In the third experiment the trees were bled in this way. Only four trees were available for this experiment. The total height of the stem and branches bled by the British Guiana method was 74½ feet, and in the Venezuelan method 97½ feet, the yields obtained being, by the former method, 5 pounds, and by the latter, 4 pounds 5 ounces—an excess in favor of the British Guiana method of 11 ounces. These were all the experiments made for the purpose of comparing the methods of tapping standing trees and tapping felled trees.

CONCLUSIONS.

The officers arrived at the following conclusion: "If the results of tapping trees by the Venezuelan method, by the method now in use in British Guiana, and by a modification of the latter in which the whole circumference of the tree was bled, instead of half the circumference, be compared, they show that the greatest yields obtained were by the last method, and in no case did the yield from the trees which were felled and bled over the whole circumference exceed the yield obtained from the trees which were bled round the whole circumference, while standing, in experiment 2. The yield obtained from trees bled by the British Guiana method, in experiment 1, gave, per tree, 5 ounces less of dry balata than those bled by the Venezuelan method; in experiment 3 they gave 5½ ounces more per tree; in experiment 2 they gave 14½ ounces less per tree. In the last named it has been previously pointed out that the trees bled by this system were smaller than those bled by the other system, while the larger trees in the experiment have generally given the greatest yields.

"If the results of all the bleeding be taken together the yields obtained per tree are: British Guiana method, 2 pounds; Venezuelan method, 2 pounds 7¼ ounces—a difference of 7¼

ounces per tree. The felling of the tree before bleeding, as is done in the latter system, necessitates the employment of two men, while one can bleed a standing tree. Felling takes longer to execute, and it frequently necessitates the felling of one or more of the surrounding trees, so as to allow a clear space for the tree to fall. It demands the conveyance of additional implements, viz., axes, calabashes or collecting vessels. All of these render collection of the milk more difficult. Further, it destroys the tree, the value of which for timber in this colony is well known. In order, therefore, to compensate for difficulties ensuing in this method of extracting the latex, very large yields should be obtained. The experiments do not indicate that comparatively large yields are obtained."

THE AREA TAPPED

On the question of tapping half the circumference or the whole circumference of standing trees, the officers recommended the former, saying: "In the hands of other than a careful bleeder it may result in the death of the tree. The tapping of one-half the circumference of a tree by the local method is the most efficient system, yielding far greater returns than any of the others per area of the bark bled."

FURTHER EXPERIMENTS.

Mr. C. Wilgress Anderson, forestry officer, conducted similar experiments for comparative purposes with trees in the Berbice River District, with the following results: Yield of six trees tapped standing, with incisions extending half way round trunks, 33.5 pounds of balata; yield of six trees tapped felled, with incisions extending completely or nearly completely around the trunk, 21.5 pounds—a difference in favor of the former method of 12 pounds, or 36 per cent. gain in balata. "Presuming," says Mr. Anderson, "that the trees, if tapped standing, around the whole circumference of the trunks, would yield twice as much latex as when tapped only half-way, the gain in balata would then be as much as 68 per cent. over that yielded by the felled trees. I may mention here that the Indians employed on the work predicted a smaller return from the trees tapped felled than from those tapped standing."

The experiments demonstrate that the figures produced in support of the felling method were entirely erratic, and it may be taken for granted that this method will not be sanctioned by the government in this colony.

SURINAM BALATA INDUSTRY IN 1913.

According to a report of the Surinam balata industry for 1913 it would seem that the production almost reached the record figure of 1911. The quantities for the last ten years have been: 1904, 225 tons; 1905, 244 tons; 1906, 267 tons; 1907, 348 tons; 1908, 454 tons; 1909, 630 tons; 1910, 893 tons; 1911, 1,146 tons; 1912, 727 tons; 1913, 1,086 tons.

The large production of 1913, tho slightly under that of 1911, was attained by the employment of a larger number of workers, while the quantity of balata was less in 1912 by reason of the drought of that year.

The area planted in Pará rubber in British Guiana is estimated at 2,700 acres.

Of the rubber hose and other rubber goods, worth \$145,930, imported into Cuba during the year 1912, manufactures to the value of \$110,686, were from the United States; and of the balance, \$24,169 represented purchases from Germany.

British imports of tires for automobiles and motorcycles for the first two months of 1914 amounted to £371,458, as against £452,302 for the same period of 1913. Exports also showed a slight decrease, amounting to £110,635 in 1914, against £142,486 in 1913. Re-exports increased £6,034, from a value in 1913 of £32,772.

Some Rubber Planting Notes.

SINGAPORE CHAMBER OF COMMERCE RUBBER ASSOCIATION.

UNDER the presidency of H. Price, the above-named association recently held its annual meeting to receive the first yearly report under its present amended constitution, which makes the association relatively an independent body, altho in a general way subject to the Chamber of Commerce.

During the year 1913 fifty-two auctions have been held, dealing with 1,508 tons of rubber, a satisfactory increase upon the 522 tons handled in the previous year, and forming one-third of the total of the year's sales at Singapore, as against a proportion in 1912 of only one-fifth. The 4,500 tons for 1913 represented more than 10 per cent. of the total exports from Malaysia and Ceylon of 43,000 tons.

While it is admitted in the report that there has been great variation in the qualities of rubber offered for sale, the hope is expressed that the efforts of producers will soon lead to the production of thoroughly reliable standard grades, serving as a basis for forward contracts, rules governing which have already been formulated. A sub-committee has prepared eighteen types of the grades now being handled, which are at the disposal of members wishing to make them a basis for orders.

By selling in Singapore, plantation owners claim that they save 1½d. (3 cents) per pound as compared with sales in London. The falling off in supplies of guayule and jelutong had made the demand for plantation rubber greater than ever before. The advantages to buyers and sellers of the Singapore market were fully dealt with by the various speakers.

OFFICIAL VULCANIZING PLANT AT KUALA LUMPUR.

The new buildings of the Federated Malay States Department of Agriculture at Kuala Lumpur contain quarters for laboratory assistants, to be engaged in the testing of rubber, fibers and paper pulp, with a view to the standardization of those substances. From a partial inspection of the plant, it would seem that it includes a crêping machine and a mixing machine, both steam-injected and water-cooled. In the latter the sheet of crêpe is mixed with the sulphur and other chemicals used before being taken on to the calender machine. With this machine, Mr. B. J. Eaton, the agricultural chemist, states that three rollers are employed, between which the rubber is conducted, being taken off the canvas, and the thin sheets placed in molds to be put in the three presses—an ordinary open steam press, a high-pressure steam boiler and a hydraulic press. This last-named machine is a miniature of the presses now used for motor tires, giving much more even working than the open press. Other machines for vulcanizing and testing have been ordered, including those of Breuil and Schwartz.

RUBBER EXPORTS FROM FEDERATED MALAY STATES.

According to a cablegram from the Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of March amounted to 2,418 tons, as compared with 1,737 tons in the corresponding month last year and 2,364 tons in February last.

Below are the comparative statistics for 1912, 1913 and 1914:

	1912.	1913.	1914.
January	1,218	2,131	2,542
February	1,212	1,757	2,364
March	1,379	1,737	2,418
Total	3,809	5,625	7,324

INTERNATIONAL ASSOCIATION FOR RUBBER CULTIVATION IN THE NETHERLAND INDIES.

The above is the title definitely selected for the new Netherlands Association, the formation of which was recorded in THE INDIA RUBBER WORLD for February last, page 270. In harmony with the international character of the organization, its articles of association have been published in Dutch, English and French. The objects, among others, are: To promote the cultivation of rubber in the Netherlands Indies and to protect the interests of its members in that connection; to hold meetings; to study legislative and administrative measures, and to investigate phenomena connected with rubber cultivation. It will set up or support scientific establishments dealing with rubber and will arrange for lectures and for the publication of printed matter on the subject. Membership costs 100 guilders (\$40).

RETURNS OF NETHERLANDS INDIA COMPANIES

The result of keeping the production of tea on a level, and of throwing the increase into rubber, is shown by the return of the General Belgium-Java Cultivation Company, which records for rubber: 1912, 88,000 pounds; 1913, 208,300 pounds; tea returns being respectively 180,200 and 204,300 pounds for the two years.

Comparative returns of rubber outputs by other companies are:

	1912.	1913.
	Pounds.	Pounds.
Bélgisch-Nederlandsche Cultuur Maatschappij.	218,900	363,850
Plantations de Bantam.....	76,610	134,624
Nieuw Tjisalak	80,823	120,404
Rubber Cultuur Maatschappij, Amsterdam...	219,700	460,700

INDRAGIRI SUMATRA RUBBER AND GUTTA PERCHA CO LIMITED.

In its annual report to October 31, 1913, this company states that its planted area includes 657 acres under rubber and 285 under gutta percha. The crop for 1914 is estimated at a total of about 51,000 pounds.

ANGLO-DUTCH PLANTATIONS OF JAVA. LIMITED

According to the report of the above company, the rubber yield of 1913 equalled 90,848 pounds, the younger rubber plantations having been affected by the drought to only an unimportant extent and the trees being generally in good condition.

PROPOSED RAILWAY FOR SOUTHERN SUMATRA.

A meeting of interested parties took place on March 25 at The Hague, to advocate the importance of the proposed railroad as a factor in the economic development of South Sumatra.

COMPARATIVE RUBBER ACREAGE IN JAVA AND SUMATRA.

Recent statistics show the following acreages planted in rubber:

	Java.	Sumatra.
1906.....	25,000	6,000
1907.....	38,000	20,000
1908.....	60,000	39,000
1909.....	107,000	67,000
1910.....	158,000	100,000
1911.....	208,000	160,000
1912.....	230,000	220,000
1913.....	245,000	240,000

MEETINGS AND REPORTS OF IMPORTANT RUBBER PLANTING COMPANIES.

Returns of the Ratanui Rubber Estate, Limited, Federated Malay States, show the production for the business year 1913 to have been 139,377 pounds, as compared with 84,021 pounds during the preceding annual period. The average net price realized was 2s. 9½d. (67.91 cents) per pound, against a cost of 1s. 1½d. (27.37 cents). Estimate for current year is 200,000 pounds.

The Bukit Panjong Syndicate, Limited, Federated Malay States, in 1913 had an output of 195,265 pounds, against an estimate of 190,000. Cost of production, f. o. b., was 1s. 1d. (26.35 cents) per pound, while average net price realized was 2s. 6¼d. (61.32 cents.) A new issue of capital to the extent of \$25,000 is contemplated.

Satisfactory progress and freedom from disease was the tenor of the report of the Val d'Or Rubber Estates, Limited, Penang, which in 1913 produced 153,625 pounds at a cost, f. o. b., of 1s. 5½d. (35.47 cents) per pound, as compared with a gross selling price of 3s. 4½d. (82.10 cents). This company claims to have reached a self-supporting stage.

The output for the year 1913 of the Kamunting (Kedah) Rubber Plantation Co. was about 90,000 pounds, the total cost of which was 1s. 10d. (44.60 cents) per pound. Cost had been reduced through the operation of the new machinery, while the yield of the trees had increased. About 1,000 acres have been planted, which left a balance of 500 acres for future requirements.

As compared with an estimate of 125,000 pounds, the output of the Sendayan Rubber Co. (Federated Malay States) for the business year 1913 was 154,320 pounds, while the estimated output for 1914 is 225,000 pounds. The average cost was 2s. 0.83d. (50.34 cents), while the gross price realized was 2s. 9.20d. (67.30 cents).

Owing to the fact that the cost of maintenance and working would exceed any income obtainable from the sale of rubber, the directors of the Meritini Rubber Estates, Limited, have decided to discontinue the working and cultivation of their East African rubber plantations. In this policy they are following the lines adopted by various rubber estates in British and German East Africa.

A marked increase over the estimate signalized the business year of the Lumut Rubber Estates, Limited (Federated Malay States), ending September 30. A quantity of 310,720 pounds was produced, against 190,000 pounds anticipated. The area under cultivation is 3,021 acres, while an additional 46 acres has been cleared.

The total crop harvested in the financial year 1913, by the Castlefield (Klang) Rubber Estates (Federated Malay States) was 240,851 pounds, the cost of which was 1s. 7½d. (39.53 cents) per pound, while the average net price realized was 3s. 2.3d. (77.63 cents) per pound. Negotiations have been concluded for the acquisition of the adjoining Rosapenna Estate, the cost of which will be met by the issue of additional capital.

More than 100 per cent. increase is shown by the output of the Braunston (Malay) Rubber Estates, Limited (Federated Malay States). The quantity for the year ending September 30, 1913, was 156,500 pounds, as compared with 71,192 pounds for the preceding annual period.

By the report of Pegoh, Limited (Malacca), that company is in a prosperous condition. It has an area of 2,421 acres in rubber, with a total of 403,095 trees, one-half of which are being tapped. The product for 1913 was 347,498 pounds, as against an estimate of 320,000 pounds. The total cost was 1s. 10d. (44.60 cents), and the gross average price realized 3s. 2¾d. (78.04 cents) per pound. For 1914 the crop is estimated at 425,000 pounds.

An increase from 153,295 pounds in 1912 to 212,481 pounds in 1913 is recorded for the Bikam Rubber Estate, Limited (Federated Malay States). The average gross selling price was 3s. 2.08d. (77.20 cents), and 57,000 pounds have been sold for delivery in 1914 at 2s. 7.09d. (63.02 cents).

NEW PROCESS OF TAPPING IN GERMAN EAST AFRICA.

According to the "German East African Gazette," a new process of tapping has been discovered by Herr Migdalski, director of the Prinz Heino plantation at Morogoro, East Africa.

Subsequent to the tapping on the Lewa system, there is applied to the incised parts a piece of strong, coarse and heavy sailcloth, 28 inches long by 4 inches wide, impregnated with a solution of vinegar. When complete adhesion has been obtained by stroking with the hand, the material is withdrawn. The latex which has flowed from the incisions adheres to the fabric and is gradually coagulated into a pellicle of the same dimensions, which is easily removed and even comes off of itself when its weight reaches about 11 ounces.

It is claimed for this process that it is not needed to make as many incisions as by the old methods, it being thus possible to tap more frequently. The rubber obtained is said to be much purer than that previously received, while it can be cleaned by hand instead of requiring the use of a machine. The skill hitherto called for in the work is not required.

It is also claimed that the yield thus obtained is double or triple that previously received. Before it is used, the sailcloth ought to be steeped for twelve hours in a solution of vinegar of about one part in two hundred. Practice has, however, shown that a new sailcloth need only be steeped in the ordinary coagulating solution at the time of its employment.

This new process appears likely to diminish the cost of operation and to be of material assistance to planters in their present difficulties.

AN ENGLISH CONSUL ON WEST AFRICAN RUBBER.

A British consular report states that a good deal of trouble is being taken by the government to instruct young natives on the Ivory Coast in the cultivation of rubber, they being scientifically taught as to its tapping and culture. The report adds that valuable rubber is known to exist in the forest region, the supply of which has been reported to be almost inexhaustible. Unfortunately, in the past, much damage was done to the young trees by the natives cutting them down and tapping them indiscriminately.

BELGIAN CONGO PROSPECTS.

In an official statement, the Belgian minister of the Colonies has reported a prospective deficit equaling about \$4,000,000, resulting from the abolition of the domain system and from the rubber crisis. The minister expressed the opinion that oil, and not rubber, would in future be the chief product of the Congo, believing, moreover, that gold would be found in various parts of the Ituri region; while the discoveries of coal, diamonds and petroleum had prospects of economic importance. On all these points the development of railways was mentioned as an essential feature of administrative policy—possibly with loans guaranteed by the Belgian government.

PROSPECTS OF NEW CROCODILE RIVER (SELANGOR) RUBBER CO.

The above company is essentially controlled by North of England capital, and has the advantage of being under the immediate purview of Eric Macfadyen, for some time chairman of the Planters' Association of Malaya. The area under rubber is 2,149 acres, from which the product last year was 180,000 pounds, with a prospective yield of 307,000 pounds this year, 445,000 pounds in 1915 and 570,000 pounds in 1916. Mr. Macfadyen estimates the f. o. b. cost for 1914 as 1s. 1d. (26.35c.). Further reductions are anticipated, until the increasing maturity of the estates brings down the cost to about 10d. (20.27c.) per pound. These results, it has been pointed out, would leave a margin of 30 per cent. on the capital of the company.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED MARCH 3, 1914.

- N**O. 1,088,717. Treading apparatus comprising rubber faced roller. S. A. Neidich, Edgewater Park, N. J., assignor to The American Multigraph Co., Cleveland, Ohio.
- 1,088,768. Wheel tire. W. E. Budd, Elizabeth, N. J.
- 1,088,820. Tire. H. J. Griswold, Bayside, Cal.
- 1,088,843. Vehicle wheel rim. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.
- 1,088,845. Vehicle tire. J. Stromeyer, Philadelphia, Pa.
- 1,088,860. Construction of elastic and pneumatic tire. F. H. Wilbur, Lestershire, N. Y.
- 1,088,902. Cable for electric current distributing systems. P. V. Hunter, Newcastle-upon-Tyne, England.
- 1,088,905. Wheel and pneumatic tire therefor. H. Kitcher, Toronto, Ont., Canada.
- 1,088,907. Process of manufacturing a substitute for vulcanite. E. Knoll, assignor to the firm of Metall-und Isolier-Werke, G. M. B. H.—both of Memmingen, Germany.
- 1,088,930. Tire. G. Restucci, assignor of one-half to T. P. Pugliatti—both of Naples, Italy.
- 1,088,973. System comprising an open ended tube of flexible material. S. B. Drinkhouse, Denver, Col.
- 1,089,020. An elastic vehicle tire. C. A. Swinchart, Akron, Ohio.
- 1,089,044. A shoe plate for a resilient tire. H. Capdevielle, Washington, D. C.
- 1,089,057. Combination hose plugs. W. Hunsveld and C. Hansen, San Diego, Cal.
- 1,089,061. Nozzle for vaginal syringes. S. L. Kistler, Los Angeles, Cal.
- 1,089,073. Overshoe retainer. S. M. Palmer, Tonica, Ill.
- 1,089,116. Vehicle tire. P. B. Dawson, Berkeley, Cal.
- 1,089,162. Machine for cleaning crude rubber. W. R. Smith, Buffalo, N. Y.
- 1,089,198. Hand stamp. E. Fisher, Detroit, Mich.
- 1,089,222. Tire protector. W. Jacobson, Lents, Ore.
- 1,089,236. Attachment for garment cementing machines. S. Lipson, Saugus, Mass.
- 1,089,265. Tire hose tool. C. Relfax, assignor to F. M. Exlard—both of Bath, Me.
- 1,089,284. Tire comprising a metal rim and rubber shoe. A. Stewart, Keota, Iowa.

Trade Mark

- 57,310. Goodyear Rubber Co., San Francisco, Cal. The word *Hippo*. For rubber hose.
- 74,307. Frank & Meyer Neckwear Co., St. Louis, Mo. The word *Regal*. For suspenders, garters, etc.
- 74,334. O. Krichbaum, Ashland, Ohio. The word *Maxotire*. For inner tires or liners.
- 74,533. Hood Rubber Co., Watertown, Mass. The word *Kickoff*. For rubber footwear, etc.
- 74,644. P. Bailly & Cie, Paris, France. Illustration of buckle. For suspenders, braces, etc.
- 74,666. P. Bailly & Cie, Paris, France. The letters C and G separated by star, under which are the printed words "Bretelles Hygieniques, Charles Guyot, a Paris." For suspenders, braces, etc.
- 74,666. P. Bailly & Cie, Paris, France. Drawing showing suspenders, etc. For suspenders, braces, etc.
- 75,433. The Canfield Rubber Co., Bridgeport, Conn. Illustration of dress shield with motto "Merit Will Win." For dress shields.

ISSUED MARCH 10, 1914.

- 1,089,406. Spray nozzle. J. L. Fitts, Pensauken township, Camden County, N. J.—assignor to Warren Webster & Co., of New Jersey.
- 1,089,445. Automobile wheel. B. B. Stapleton, Downing, Mo.
- 1,089,482. Process of manufacturing an elastic foam from volatile solutions. F. Laarmann, Dresden, Germany.
- 1,089,489. Sectional resilient tire. C. A. Marien, St. Louis, Mo.
- 1,089,510. Fastening for overshoes. R. B. Stroup, Homeworth, Ohio.
- 1,089,511. Vehicle wheel. A. J. Swing, Cincinnati, Ohio.
- 1,089,595. Spraying device for the hair and scalp. H. Sopha, assignor to F. C. Dormont—both of Detroit, Mich.
- 1,089,601. Wheel. A. J. Swing, Cincinnati, Ohio.
- 1,089,617. Life saving buoy. J. B. Adams, Christchurch, New Zealand.
- 1,089,634. Vehicle wheel rim. R. F. Geide, Rochester, N. Y.
- 1,089,652. Pneumatic bed spring, comprising elastic, inflatable tubes. J. J. Lisbae, Canton, Ohio.
- 1,089,676. Vehicle tire. L. L. Savoie and E. F. Genevay, New Orleans, La.
- 1,089,714. Base ball. Clarence S. Lincoln, Chicago, Ill.
- 1,089,805. Medical appliance. G. Wolf, Berlin, Germany.
- 1,089,838. Teat cup for milking machines. I. L. Hulbert, Poughkeepsie, N. Y.—assignor to De Laval Separator Co., of New Jersey.
- 1,089,897. Sectional cushion tire. J. H. and I. E. Bedell, Stamford, Conn.
- 1,089,899. Vehicle wheel rim. P. B. Bosworth, Akron, Ohio.
- 1,089,913. Pneumatic vehicle tire. J. J. Dittenhoefer, Chicago, Ill.

- 1,089,932. Milking device. W. Lubke, Breslau, Germany.
- 1,089,979. Spring wheel. F. Stitzel, Louisville, Ky.
- 1,090,087. Resilient wheel for vehicles. G. H. Robinson, Bayswater, London, England.
- 1,090,114. Rim for pneumatic tires. B. Bradford, Norristown—assignor to Lee Tire & Rubber Co., Conshohocken, Pa.

Design.

- 45,368. Shoulder brace. T. G. Bowers, New Haven, Conn.

Trade Marks.

- 69,005. Lee Tire & Rubber Co., Whitmarsh township, Montgomery County, Pa. The word *Leland*. For supporters, trusses and other druggists' sundries.
- 75,380. The Cutler Hammer Mfg. Co., Milwaukee, Wis. The word *Thermoplax*. For insulating material.
- 75,453. D. E. Kennedy, Incorporated, New York. The word *Everlastic*. For elastic floor tiles.
- 75,472. Coes & Young Co., Boston, Mass. The words *Joy Walkers*. For rubber footwear.

ISSUED MARCH 17, 1914.

- 1,090,145. Detachable tread for pneumatic tires. L. F. C. Haas, Lancaster, Pa.
- 1,090,069. Vehicle tire. A. W. Savage, Duarte, Cal.
- 1,090,195. Tire. C. E. Bright, Columbus, Ohio.
- 1,090,199. Resilient wheel. G. Caury and L. Salé, Marseilles, France.
- 1,090,290. Tire tool. W. F. Edgington and A. Murray, Springfield, Ohio.
- 1,090,297. Rubber tire cutting machine. A. Greenwell, Owensboro, Ky.
- 1,090,314. Hat cushion. W. and J. Levy, Baltimore, Md.
- 1,090,369. Insulating sleeve or tube machine. F. Wunderlich, Swissvale, Pa.—assignor to Westinghouse Electric & Mfg. Co., of Pennsylvania.
- 1,090,373. Spring wheel. F. P. Bacon, Los Angeles, Cal.
- 1,090,394. Coil insulating machine. E. Haffely, Basel, Switzerland—assignor to Westinghouse Electric & Mfg. Co., of Pennsylvania.
- 1,090,446. Cotton picker's knee pad. W. A. Boynton, Newcastle, Tex.
- 1,090,450. Vehicle wheel tire. M. Clark, Chicago, Ill.
- 1,090,513. Sectional wheel rim. S. M. Beery, Indianapolis, Ind.
- 1,090,535. Process of vulcanization. W. G. Hill, assignor to Apsley Rubber Co.—both of Hudson, Mass.
- 1,090,564. Tool for spreading tire cuts. W. Petersen, Chicago, Ill.
- 1,090,596. Floating jacket. W. N. Bryers, Helmer, Mich.
- 1,090,605. Tire construction. H. W. Dyer, East Orange, N. J.
- 1,090,703. Spring wheel. L. A. Furuseth, Belmond, Iowa.
- 1,090,727. Pneumatic tire and fastener therefor. J. A. Leach, Jr., Effingham, S. C.
- 1,090,797. Spring wheel. J. D. Short, Texhoma, Tex.

Reissue

- 13,701. Garter package. F. A. Freeman, Overbrook, Pa., assignor to Pioneer Suspender Co., of Pennsylvania.

Design.

- 45,441. Rubber needle massage brush. B. L. Williams, Camden, N. J.

Trade Marks.

- 74,477. Rossendale Reddaway Belting & Hose Co., Newark, N. J. Illustration of camel in disconnected circle. For driving belts, machine belting, etc.
- 74,488. C. A. Daniel, Philadelphia, Pa. The word *Ringmeter*. For rubber hose.

ISSUED MARCH 24, 1914.

- 1,090,834. Resilient wheel. J. H. Brizendin, Lees Summit, Mo.
- 1,090,838. Vehicle tire. C. H. De Voll, New York.
- 1,090,844. Combined corset and abdominal supporter. M. Goodside, New York.
- 1,090,847. Process for manufacturing synthetic caoutchouc. C. C. F. Gross, Christiania, Norway.
- 1,090,851. Metal tread for block tires. C. E. Herman, assignor of one-half to S. C. Munson—both of Columbus, Ohio.
- 1,090,936. Breathing device. G. A. Morgan, Cleveland—assignor to The National Safety Device Co., Oberlin, Ohio.
- 1,090,954. Vehicle suspension apparatus comprising a tubular india rubber spring. F. Walton, Holborn, London, England.
- 1,090,996. Spring tire for vehicle wheels. J. W. Leonard, Newburgh, N. Y.
- 1,091,005. Automobile tire. E. G. McDill, Sparta, Ill.
- 1,091,016. Alarm for pneumatic tires. J. B. Polo, Clear Lake, S. D.
- 1,091,040. Automobile inflater for pneumatic tires. R. Connell, Christchurch, New Zealand.
- 1,091,124. Vehicle wheel comprising a pneumatic rubber tube and tire. T. Dyer, Cranston, R. I.
- 1,091,174. Cushion heel for boots or shoes. O. W. Tule, Hartford, Conn.

- 1,091,176. Tire. E. W. Wilson, assignor to Detroit Pneumatic Tire Co.—both of Detroit, Mich.
- 1,091,211. Garment with elastic bands to provide for contraction and expansion. G. Gelormini, Newark, N. J.
- 1,091,241. Wheel with sectional tire. J. Pierce, Ogden, Utah.
- 1,091,270. Tire. J. P. Attaway, Oswego, S. C.
- 1,091,287. Tire. J. Cairns, Walsall, England.
- 1,091,302. Resilient wheel. W. F. Doll, New York.
- 1,091,303. Resilient wheel. W. F. Doll, New York.
- 1,091,316. Tire. Lyman H. Ferguson, Buffalo, N. Y.
- 1,091,373. Automobile tire protector. N. H. Miller, Meadville, Pa.
- 1,091,379. Pneumatic tire for vehicles. O. Mussinan, New York.
- 1,091,384. Hose rack. W. T. Oliver, Newport News, Va.
- 1,091,387. Packing for wells comprising a rubber sleeve. W. S. Pierce, Franklin, Pa.
- 1,091,394. Hand stamp. L. K. Scotford, Chicago, Ill.—assignor to Hill-Independent Mfg. Co., Philadelphia, Pa.
- 1,091,437. Skid chain. J. A. McDonald, Winthrop—assignor to J. R. Peck, Brookline, Mass.

45,498. Tire. H. R. Smith, Lakewood, Ohio.

- 68,001. The Seamless Rubber Co., New Haven, Conn. Black fleur de lis in circle with company's name and address written around edge. For rubber gloves.
- 70,140. The Original Puncturefix Co., Marion, Ohio. Triangle illustration of hand hammering nails in tire. A filling composition for pneumatic tires.
- 71,640. Oliver's Sporting Goods House, Philadelphia, Pa. The word *Usafa*. For balls of all kinds.
- 75,553. T. G. Plant Co., Boston, Mass. The words *Queen Quality*. For boots and shoes of leather, rubber, etc.

ISSUED MARCH 31, 1914.

- 1,091,476. Tire. S. O. Rigney, assignor to Sidney Suspender Co.—both in Attleboro, Mass.
- 1,091,480. Pneumatic or elastic tire. C. Burnett, Durham, England.
- 1,091,503. Vehicle wheel. G. F. Geb, Franklin, Mass.
- 1,091,515. Spring wheel. F. P. Holmes, Larned, Kan.
- 1,091,573. Metal tire band. T. Higgins, Pittsburgh, Pa.
- 1,091,698. Apron and cup supporting device adapted to be secured to a tree. E. R. Philip, Atlanta, Ga., assignor to American Can Co., New York.
- 1,091,699. Combined apron and cup supporting device adapted to be secured to a tree. E. R. Philip, Atlanta, Ga., assignor to American Can Co., New York.
- 1,091,725. Insulating composition. L. E. Barringer, Schenectady, N. Y., assignor to General Electric Co., New York.
- 1,091,759. Hose coupling. F. E. Paradis, Buffalo, N. Y.
- 1,081,780. Pneumatic tire pressure gage and dust cap. G. E. Traub, San Diego, Cal.
- 1,091,807. Wheel rim and tire. M. H. Cain, Indianapolis, Ind.
- 1,091,815. Hose supporter. R. E. Dodge, New Haven, Conn.
- 1,091,818. Tire supporting receptacle. R. Eisenmann, Chicago, Ill.
- 1,091,809. Hose attaching device. C. Elkin, New York.
- 1,091,839. Tire valve tool. E. N. Haverfield, Cadiz, Ohio.
- 1,091,878. Waterproof blast cap charge protector. J. M. Cordray, Los Angeles, Cal.
- 1,091,944. Apparatus for inflating pneumatic tires. H. W. Meier, assignor to H. W. Meier & Co.—both of Baltimore, Md.
- 1,091,977. Syringe. J. A. Speck, Pawhuska, Okla.
- 1,091,981. Tire protective rivet. E. B. Stimpson, Brooklyn, assignor to E. B. Stimpson Co., of New York.
- 1,092,006. Game board. W. A. Bailey, Lincoln, Neb.
- 1,092,016. Poison indicator, comprising an elastic band. R. W. Bugbee, St. Louis, Mo.
- 1,092,068. Means for automatically inflating pneumatic tires. A. L. McDonald and D. L. Middleton, Sanderson, Fla.
- 1,092,078. Cushion tire, which is hollow. M. C. Overman, New York.
- 1,092,105. Removable waterproof lining. H. C. Holmes, Portland, Ore.
- 1,092,119. Tire. L. H. Ferguson, Ithaca, N. Y.
- 1,092,129. Method of manufacturing rubber blocks for springs, etc. A. G. Spencer, London, England.
- 1,092,130. Tube for pneumatic tires. W. A. Vail and O. E. Smith, assignors of one-fourth each to the following: O. E. Smith, Chicago, Ill.; W. A. Vail, Chicago, Ill.; and W. A. Vail—all of Chicago, Ill.

Design.

45,548. Rubber brush. O. Eick, St. Louis, Mo.

Trade Marks.

- 72,971. C. W. Hutchings, assignor to Index Co., Inc.—both of New York. Illustration of hand, on index finger of which is a tooth brush. For tooth brushes.
- 74,417. L. Meredith, London, England. Illustration of snakes coiled around tree. For pneumatic tires.
- 75,589. The Royal Equipment Co., Bridgeport, Conn. Illustration of brake lining. For brake lining.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

*Denotes Patents for American Inventions.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 4, 1914.]

- 25,514 (1912). Punching balls. H. Edwards, 64 Commercial street, Newport, Monmouthshire.
- 25,575 (1912). An apparatus for repairing rubber goods. N. I. Spriggs, 83 London Road, Leicester.
- 25,612 (1912). Rubber tapping knives, etc. T. and H. Burman, Lee Bank Works, Ryland Road, Birmingham.
- 25,616 (1912). Twin detachable rims carrying elastic tires. C. S. Challiner, 18 Park Range, and J. A. Challiner, The Glen, Anson Road—both in Victoria Park, Manchester.
- 25,641 (1912). Spraying nozzles. W. A. Dexter and J. P. Little, 45 Scotland street, Glasgow.
- 25,719 (1912). Solid rubber tire of the band type. T. Gare, Cumberland House, Park Lane, Wembley, Middlesex.
- 25,779 (1912). Pneumatic tire covers. G. W. Beldam, Boston Lodge, Ealing, London, and A. U. B. Ryall, Granville, Windmill Road, Brentford, Middlesex.
- 25,781 (1912). Sock suspender. F. Barth, 151 Ronsdorferstrasse, Barmen, Germany.
- 25,842 (1912). Protective cover for rubber football bladder. J. W. Albers, 1 Bremerstrasse, Harburg-on-Elbe, Germany.
- 25,865 (1912). Tire attachments to rims. J. Stungo, 11 Eylauerstrasse, Berlin.
- *25,887 (1912). Rubber diaphragm in connection with foot arch supports. W. C. J. Guilford, 722 Tenth street, Northwest, Washington, U. S. A.
- 25,912 (1912). Elastic substances. W. E. Reeser, 46 Amsteldijk, Amsterdam.
- 25,915 (1912). Detachable rubber treads for foot operated levers. R. Surridge, 58 Lomond Grove, Camberwell, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 11, 1914.]

- 26,153 (1912). Spring wheels. C. Madden, 53 Devonshire street, Islington, London.
- *26,191 (1912). Spring wheel with continuous outer rigid ring and pneumatic cushions. G. A. Eberhardt, 2840 South Forty-first avenue, Chicago, Ill., U. S. A.
- 26,277 (1912). Extracting gutta-percha, etc., from shrubs. G. Hughes, 55 Chancery Lane, London.
- *26,312 (1912). Respiratory apparatus. G. A. Morgan, 52027 Harlem avenue, and J. W. Wills, 2323 Central avenue—both in Cleveland, Ohio, U. S. A.
- 26,379 (1912). A solid rubber or like tire in which is embedded an endless articulated band. A. W. Torkington, 76 York street, Westminster, and Stelatic & General Syndicate, 11 Queen Victoria street, London.
- 26,387 (1912). Tire with rim enclosing air tube or chamber. M. Schwertfuhrer, 117 Avenue de la Reine, Brussels.
- 26,446 (1912). Implement for tapping rubber trees, etc. J. Da C. Gadelha, Nova Vista, Labrea, Amazonas.
- 26,513 (1912). Tire tool. W. J. Hill, 64 Vivian Road, Harborne, Birmingham.
- 26,524 (1912). Rubber sole with integral rubber studs—for boots or shoes. S. Dreyfus and L. Gaisman, trading as Hooley Hill Rubber & Chemical Co., Stamford Road, Hooley Hill, Manchester.
- 26,550 (1912). Caoutchouc substances. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
- 26,589 (1912). Aeronautics. E. S. Drake, 79 Welland avenue, St. Catharines, Ontario, Canada.
- 26,598 (1912). Rubber heel for boots, etc. A. Demorey, 18 Boulevard du Nord, and B. Tournier, 47 Rue Montgolfier—both in Lyons, France.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 18, 1914.]

- *26,669 (1912). Air tubes and chambers for wheel tires. H. McCleary, 1226 New Hampshire avenue, Washington, U. S. A.
- 26,679 (1912). Stethoscopes, etc. C. A. Teske, 33 Percy street, Tottenham Court Road, London.
- 26,682 (1912). Exercising apparatus: massage. H. J. Wareham, 28 Gateley Road, Brixton, London.
- *26,688 (1912). Appliances for cleaning vehicles, windows, etc. C. F. Schuh, 11 Shephard avenue, Newark, N. J.
- 26,754 (1912). Means for attaching rubber bulbs, etc., to metallic and like tubing. M. Kemp Welch, Corrie, Harriatts Lane, Ashted, Surrey.
- 26,819 (1912). Spring wheels for vehicles. C. S. Hope-Johnstone, 96 Piccadilly, London.
- 26,874 (1912). Wheel tires. C. M. Lloyd, Claridge's Hotel, Brook street, London.
- 26,946 (1912). Flooring for a tennis court, comprising india rubber or like tiling. R. K. Gray, 106 Cannon street, London.
- 26,960 (1912). Footballs. W. McConnell, Greenside Place, Auchenleck, Ayrshire.
- 27,003 (1912). A non skid device, adapted to be embedded in the tread of an elastic tire. G. W. Beldam, Boston Lodge, Ealing, London.
- 27,010 (1912). Eraser holders. E. W. Yelf, 31 Castle Road, Portsmouth.
- 27,059 (1912). Tread of a pneumatic tire. E. Wendel, Saargemund, Lothringen, Germany.

[NOTE.—Printed copies of specifications of United States patents may be obtained from the Commissioner of Patents, Washington, D. C.]

- 27,385 (1912). Spring wheels with sectional outer guided members. M. A. E. McCarthy, 32 Hanover Road, Brondesbury Park, and H. S. Smith, 10, Grosvenor Road, London.
- *27,395 (1912). Shaving brush and rubber massage pad combined. M. L. Brandt, 547 Howard avenue, Brooklyn, N. Y., U. S. A.
[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 25, 1914.]
Buildings, Sacramento, Cal., U. S. A.
- Cooke, 17 St. Edmunds Terrace, Regent's Park, London.
- Turenki, Finland.
- Derbyshire.
- 70 Ivor Road, Sparkhill—both in Birmingham.
- London, E.C.
- ning Town, London.
- Surrey.
- 605 West Gay street, West Chester, Pa., U. S. A.
- *27,891 (1912). Non skid device. M. A. Carter, Granville, New York, and O. C. Smith, Bridgeport, Conn., U. S. A.
- London.
- 27,941 (1912). Abdominal belts. A. Wolz, Coire, Grisons, Switzerland.

THE FRENCH REPUBLIC.

PATENTS ISSUED With Dates of Application

- pneumatic tires.
- Process of treating india-rubber, gutta-percha, and other similar crude resinous gums, for the obtaining of pure rubber.
- justing rivets and washers on the leather parts of antiskid tires.
- 462,826 (September 20, 1913). S. Librowicz. Protective equipment for pneumatic tires.
- 463,064 (December 7, 1912). Paris General Omnibus Co. Circular mud-guard tire, specially intended for heavy vehicles at a high speed.
- wheels of automobiles and other vehicles.
- vehicles and other purposes.
- tube replacing the air chamber for automobile tires.
- 463,145 (October 2). Société Anonyme Caoutchouc. Antiskid tire for all vehicles.
- 463,169 (October 2). E. L. Autraignes. Movable and interchangeable tread for pneumatic tires of vehicle wheels.
- for filling pneumatic tires for automobiles, etc.
- solid and elastic mass by means of leather waste.
- 463,270 (October 4). D. A. York. Elastic tire for vehicle wheels.
- 463,277 (October 4). G. Boivin. Antiskid protector for pneumatic tires.
- covers of tires for all vehicles.

- 463,437 (September 3). Badische Anilin & Soda Fabrik. Improvement in quality of synthetic rubber substances and vulcanization of products thus obtained.
- 463,515 (October 10). A. Leewitz. Heating apparatus and automatic regulation of temperature, particularly applicable to vulcanization.
- 463,622 (October 14). Actiengesellschaft für Anilin Fabrikation. Synthetic rubber with an acetyl-cellulose base; as well as oilcloths, imitations of leather and similar products.
- 463,681 (October 16). H. G. Hugan. Improvement in fastenings for wooden shoes.
- 463,684 (October 16). J. K. Williams. Improvements in process for vulcanizing rubber objects.

[NOTE.—Printed copies of specifications of French patents can be obtained at 1 franc per copy, plus 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED With Dates of Validity

- thetic products resembling rubber. Badische Anilin- und Soda-fabrik, Ludwigshafen-on-Rhine.
- 271,855, Class 63e (August 26, 1913). Device for indicating the escape of air from pneumatic tires. Josef Hilbert and Carl Hilbert, Aix-la-Chapelle.
- 271,856, Class 63e (April 15, 1913). Antiskid device for pneumatic tires. Fritz Spitzbarth, Plauen, Saxony.
- Class 39a (August 8, 1912). Process for arrangement of spiral-formed thread insertions in rubber discs. Globus Rubber and
- 272,325, Class 39b (December 21, 1911). Process for the production of an elastic material, resembling rubber. Algemeene Uitvinding Ex-
- 272,349, Class 30g (October 3, 1913). Fastening for feeding bottles, with valve opening by suction. Karl Kühnle, Perleberg.
- 272,398, Class 39a (November 22, 1912). Machine for washing rubber and like substances. J. E. Pointon, Westwood Works, Peterborough, England.
- 272,399, Class 39b (December 4, 1912). Process for the improvement of synthetic substances resembling rubber (supplement to Patent 271,849). Badische Anilin- und Sodafabrik, Ludwigshafen-on-Rhine.
- 272,409, Class 63e (July 3, 1912). Rubber tires over an elastic core. Demetrio Maggiora, London.
- 272,410 and 272,411, Class 63e (June 18, 1913). Antiskid pneumatic tire cover. Vereinigte Berlin-Frankfurter-Gummiwaaren-Fabriken, Gelnhausen.
- 272,521, Class 75b (May 16, 1911). Impression of decorations by calenders on heated vulcan fiber slabs. Vulcan Fiber Import Martin Schmid, Berlin.
- 272,548, Class 63e (July 26, 1911). Pneumatic tires with insertions of layers of fabric lining. R. Latour & A. Capelle, Menin, Belgium.
- 272,606, Class 63e (April 28, 1912). Treads for motor vehicle tires, with helically wound wires in the direction of the revolution. Continental Patent Exploitation Co., Berlin.

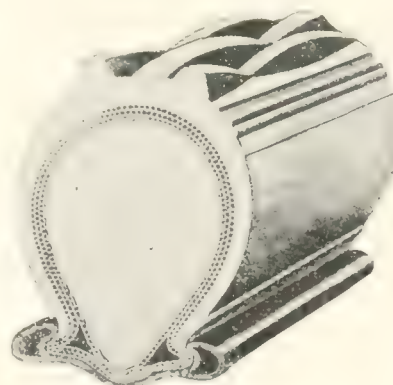
THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 262,963 (March, 1914). Process of regenerating rubber. Xylos Rubber Co., Ltd., Trafford Park, Manchester, England.
- 263,299 (March, 1914). Process for accelerating the vulcanization of natural or artificial rubber. Farbenfabriken vorm. Fried. Bayer & Co., Leverkusen, Germany.

BASKET PATTERN NON-SKID TREAD.

The accompanying cut shows a tread constructed of a non-skid rubber tread having a surface representing a basket weave.



THE BASKET PATTERN TREAD.

On account of the nature of this tread, presenting many corners and projections to the surface of the road, it is claimed to embody greater safety from skidding than has been heretofore attained by merely changing the form of the tread surface. While this tire is comparatively new in this country, it is well known in England, where it has formed a part of the equipment

of victorious cars in several notable contests. [Continental Tyre & Rubber Co., South Kensington, S. W., London.]

Review of the Crude Rubber Market.

As will be recalled, the prominent feature of the rubber market during recent months has been the gradual equalization of the London rates for fine hard Pará and plantation. On March 24 the prices were respectively 3s. 0d. (72.98 cents) and 2s. 5¾d. (60.31 cents). Owing to a gradual advance in the latter, without any notable change in the former, the positions on April 17 were equal at 3s. 0½d. (73.99 cents). From April 17 to April 25 (the time of writing), the course of the market has been as follows:

	Fine Pará.	Plantation.
April 17.....	3s. 0½d. (73.99 cents)	3s. 0½d. (73.99 cents)
April 18.....	3s. 0½d. (73.99 cents)	2s. 11¾d. (72.47 cents)
April 20.....	3s. 0 d. (72.98 cents)	2s. 11 d. (70.95 cents)
April 21.....	3s. 0 d. (72.98 cents)	2s. 10¾d. (70.44 cents)
April 22.....	2s. 11¾d. (72.47 cents)	2s. 8¾d. (66.39 cents)
April 23.....	2s. 11¾d. (72.47 cents)	2s. 7½d. (63.85 cents)
April 24.....	2s. 11¾d. (72.47 cents)	2s. 7¼d. (63.35 cents)
April 25.....	2s. 11¾d. (72.47 cents)	2s. 6¾d. (62.33 cents)

On March 24 the London plantation auction of 1,279 tons showed a good demand, with an advance of 1d. to 1½d. (2 to 3 cents) per pound. At the sale of April 7, the 1,075 tons offered also met with a good inquiry, especially for standard crêpe, with an advance of 2d. (4 cents) per pound. Cable advices report that the 1,350 tons plantation offered April 21 sold at advanced prices, as compared with the previous sale.

London statistics of Eastern plantation rubber show following results:

	1913.	1914.
Stocks February 28.....tons	2,964	4,220
Arrivals March	2,443	3,580
Total	5,407	7,800
Deliveries March	2,614	4,090
Stocks March 31.....	2,793	3,710
Arrivals Jan. 1 to March 31.....	7,759	10,980
Deliveries Jan. 1 to March 31.....	6,982	10,460

Deliveries thus seem to be keeping closer to arrivals than was the case last year, while also being numerically larger than in 1913.

The Antwerp sales of March 25 included 273 tons Congo sorts, of which 240 tons were placed; as well as 253 tons plantation, which realized 3 per cent. over the valuation. Crêpes were in good demand, particularly light colored standard descriptions. For April 28 a sale was announced of 330 tons, of which 115 tons were plantation. An impression prevails that the available stock of rubber is not sufficient to cover the wants of consumers.

At Amsterdam on April 1, 93½ tons were offered, including 86 tons *Hevea*, which commanded high prices in harmony with those current in other markets. The next inscription sale was announced for April 30.

The favorable conditions reported from London were reflected in the Rotterdam sale of April 8, which included about 40 tons *Hevea*, 10 tons *Ficus* and 10 tons Congo, etc. Owing to the brisk demand, prices were satisfactory to holders. The next sale is announced for May 8.

From Hamburg the market in the early days of April was reported quiet but firm, similar features having marked the preceding month.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and April 28, the current date:

PARA.	May 1, '13.	Apr. 1, '14.	Apr. 28, '14.
Islands, fine, new.....	80@81	69 @71	72@
Islands, fine, old.....	.....	.....	.....
Upriver, fine, new.....	82@83	74 @75	74@75
Upriver, fine, old.....	.....	.....	.....
Islands, coarse, new.....	39@40	31 @32	31@
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	55@56	44 @45	45@46
Upriver, coarse, old.....	.....	.....	.....
Cameta	42@43	35½@36	35@36
Caucho (Peruvian) ball....	57@58	45 @46	45@46
Caucho (Peruvian) sheet..	.....	.....	.....

PLANTATION CEYLON.

Fine smoked sheet.....	81@82	64 @65	68@69
Fine pale crepe.....	80@	63 @64	67@69
Fine sheets and biscuits....	80@	62 @63	62@67

CENTRALS.

Esmeralda, sausage	56@	43 @44	45@46
Guayaquil, strip .....	.....	.....	.....
Nicaragua, scrap	55@	40 @41	40@41
Panama .....	.....	.....	.....
Mexican plantat'n sheet....	.....	.....	.....
Mexican, scrap	55@56	42 @43	43@44
Mexican, slab .....	.....	.....	.....
Mangabeira, sheet .....	.....	.....	.....
Guayule .....	.....	.....	.....
Balata, sheet .....	.....	.....	.....
Balata, block .....	.....	50 @51	.....

AFRICAN.

Lopori, ball, prime .....	.....	53 @54	53@54
Lopori, strip, prime .....	.....	.....	.....
Aruwimi	65@	.....	.....
Upper Congo, ball red....	75@	.....	.....
Ikelemba .....	.....	.....	.....
Sierra Leone, 1st quality...	.....	.....	.....
Massai, red	74@	49 @54	49@52
Soudan Niggers .....	.....	49 @54	.....
Cameroon, ball	60@	34 @	35@36
Benguela .....	.....	31 @	.....
Madagascar, pinky .....	.....	.....	.....
Accra, flake .....	.....	21 @22	22@23

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During April the demand for paper has continued good, city and out-of-town banks buying freely, and rates have ruled at 4¼ to 4¾ per cent. for the best rubber names, and 5 to 5½ per cent. for those not so well known—some of the latter as high as 6 to 6½ per cent., principally Western paper.

RUBBER STATISTICS FOR MARCH.

RUBBER STATISTICS FOR MARCH.

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	300,200	55,300	178,600	52,100=	586,200
General Rubber Co.....	97,400	14,100	47,600	.....=	159,100
Meyer & Brown.....	117,800	24,800	160,200	59,700=	362,500
Robinson & Co.....	168,900	58,500	66,700	85,400=	379,500
H. A. Astlett & Co.....	6,000	11,600	98,500	23,900=	140,000
Henderson & Korn.....	8,600	6,600	17,300	46,000=	78,500
G. Amsinck & Co.....	53,000	400	16,000	8,000=	77,400
W. R. Grace & Co.....	2,200	.....	.....	10,700=	12,900
Hagemeyer & Brunn.....	.....	.....	11,200	2,800=	14,000
Total	754,100	171,300	596,100	288,600=	1,810,100

APRIL 6.—By the steamer *Pancras*, from Pará and Manáos:

	P.	M.	C.	Caucho.	Total.
General Rubber Co.....	91,900	38,300	123,700	165,900	644,300
H. A. Astlett & Co.....	31,500	12,400	61,600	219,200	495,300
L. Hagenaers & Co.....	40,000	22,000	150,500	70,500	93,800
G. Amsinck & Co.....	12,400	8,000	29,600	89,200	178,700
Robinson & Co.....	62,300	6,000	111,200	227,300	89,600
American Express Co.....	21,500			8,400	67,800
				5,500	17,900
				20,600	169,100
				21,500	
				2,200	14,700
Total			000	816,200	2,185,900

APRIL 16.—By the steamer *Frances*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	242,800	50,300	155,100	254,200	702,400
Meyer & Brown.....	88,400	24,800	77,600	385,100	575,900
General Rubber Co.....	20,800	5,000	26,800	6,700	59,300
Henderson & Korn.....	64,700	2,700	16,600	148,700	232,700
H. A. Astlett & Co.....	18,800	22,900	53,000	33,600	128,300
G. Amsinck & Co.....	2,900	8,300	32,400	45,600	86,300
Robinson & Co.....			15,000		15,000
Robinson & Co.....	131,200	26,500	7,500		227,000
Total	591,400	140,900	384,700	938,500	2,055,500

PARA RUBBER VIA EUROPE.

Henderson & Korn (Caucho)...	16,000
Rubber & Guayule Agency, Inc. (Fine).....	10,000
Various (Fine).....	5,500
APRIL 6.—By the <i>Kaiserin Auguste Victoria</i> —	
Henderson & Korn (Caucho)...	18,000
Johnstone, Whitworth & Co. (Fine).....	13,500
Raw Products Co. (Coarse).....	22,500
Robinson & Co. (Fine).....	4,500
Various (Fine).....	2,200
Henderson & Korn (Fine).....	22,500
Johnstone, Whitworth & Co. (Fine).....	11,200
General Rubber Co. (Coarse).....	11,200
Ed. Maurer (Fine).....	22,500
Rubber & Guayule Agency, Inc.	
Robinson & Co. (Caucho).....	22,500
Rubber & Guayule Agency, Inc.	

OTHER NEW YORK ARRIVALS.

MARCH 23.—By the <i>Advance</i> —Colon:	
Piza, Nephews & Co.....	2,200
W. R. Grace & Co.....	2,000
Lawrence Johnson & Co.....	1,000
Strong & Trowbridge Co.....	600
Colon:	2,500
A. M. Capen's Sons.....	1,300
G. Amsinck & Co.....	4,500
H. Marquardt & Co.....	300
MARCH 25.—By the <i>Pastores</i> —Port Limon	
A. A. Lindo & Co.....	500
MARCH 27.—By the <i>Panama</i> —Colon:	
G. Amsinck & Co.....	4,500
Lawrence Johnson & Co.....	6,700
W. R. Grace & Co.....	1,500
E. Steiger & Co.....	2,500
Harburger & Stack.....	2,000
MARCH 31.—By the <i>Suriname</i> —Belize:	
MARCH 31.—By the <i>Virginia</i> —Colombia:	
Pottberg, Ebeling & Co.....	7,000
G. Amsinck & Co.....	200
APRIL 1.—By the <i>Prinz Sigismund</i> —Colombia:	
Isaac Brandon & Bros.....	500
APRIL 1.—By the <i>Alliance</i> —Colon:	
G. Amsinck & Co.....	11,000
Wessels, Kulenkampff & Co.....	5,000
Meyer, Hecht & Co.....	500
APRIL 3.—By the <i>Mexico</i> —Mexico:	
E. Steiger & Co.....	11,000
American Trading Co.....	2,000
Pottberg, Ebeling & Co.....	500

APRIL 7.—By the *Antilla*—Mexico:

R. G. Barthold & Co.....	1,200
Adolph Hirsch & Co.....	85,000
APRIL 11.—By the <i>Saramacca</i> —Puerto Mexico:	
R. G. Barthold & Co.....	500
APRIL 11.—By the <i>Monterey</i> —Mexico:	
D. Feinburg & Co.....	1,000
Lawrence Johnson & Co.....	2,000
A. Gonzalez.....	500
APRIL 15.—By the <i>Prinz Eitel Friedrich</i> —Colon:	
A. M. Capen's Sons.....	4,000
G. Amsinck & Co.....	400
Isaac Brandon & Bros.....	600
APRIL 18.—By the <i>Morro Castle</i> —Mexico:	
G. Amsinck & Co.....	2,000
E. Steiger & Co.....	20,000
Harburger & Stack.....	10,000
APRIL 18.—By the <i>Metapan</i> —Cartagena:	
R. del Castillo.....	2,000
A. Held.....	2,000
APRIL 20.—By the <i>Panama</i> —Colon:	
G. Amsinck & Co.....	3,200
Wessels, Kulenkampff & Co.....	700
Mecke & Co.....	900
Pablo Calvet & Co.....	1,000
F. W. Dunbar.....	400
APRIL 20.—By the <i>Albion</i> —Colombia:	
Caballero & Blanco.....	2,500

EAST INDIAN.

[*Denotes plantation rubber.]

Rubber & Guayule Agency, Inc.....	*1,000
Michelin Tire Co.....	*22,500
MARCH 24.—By the <i>Lapland</i> —Antwerp:	
Meyer & Brown.....	*290,000
MARCH 25.—By the <i>Shirley</i> —Singapore:	
Ed. Maurer.....	*21,500
W. R. Grace & Co.....	*9,000
Johnstone, Whitworth & Co.....	*9,000
L. Littlejohn & Co.....	*6,000
Goodyear Tire & Rubber Co.....	*50,000
Various.....	*75,000
Meyer & Brown.....	*40,000
W. R. Grace & Co.....	*115,000
Rubber & Guayule Agency, Inc.....	*11,200
Johnstone, Whitworth & Co.....	*115,000
Henderson & Korn.....	*87,000
Arnold & Zeiss.....	*235,000
MARCH 25.—By the <i>New Amsterdam</i> —Amsterdam:	
Meyer & Brown.....	*38,000
Arnold & Zeiss.....	*96,000
Rubber Trading Co.....	*19,000
Robinson & Co.....	*2,000
MARCH 25.—By the <i>Hamburg</i> —Hamburg:	
Meyer & Brown.....	*42,000
J. Littlejohn & Co.....	*20,000
Ed. Maurer.....	*2,200
Henderson & Korn.....	*45,000
Various.....	*17,500
W. R. Grace & Co.....	*15,000
Robinson & Co.....	*11,200
Adolph Hirsch & Co.....	*9,500
W. Stiles.....	*4,500
Ed. Maurer.....	*5,600
MARCH 26.—By the <i>Uhenfels</i> —Colombo:	
Meyer & Brown.....	*16,000
Rubber & Guayule Agency, Inc.....	*6,000

MARCH 7.—By the *Missouri*—Southampton:

Adolph Hirsch & Co.....	*10,000
Robinson & Co.....	*25,000
Ed. Maurer.....	*20,000
Western Electric Co.....	*25,000
Rubber & Guayule Agency, Inc.....	*36,000
Rubber Trading Co.....	*11,200
Charles T. Wilson.....	*55,000
General Rubber Co.....	*135,000
Johnstone, Whitworth & Co.....	*75,000
Henderson & Korn.....	*90,000
W. Stiles.....	*3,000
Ed. Boustead & Co.....	*8,000
Various.....	*60,000
MARCH 30.—By the <i>Pennsylvania</i> —Hamburg:	
Meyer & Brown.....	*16,000
Henderson & Korn.....	*11,200
Rubber & Guayule Agency, Inc.....	*6,000
MARCH 30.—By the <i>Philadelphia</i> —Southampton:	
Meyer & Brown.....	*65,000
Ed. Maurer.....	*90,000
Earle Bros.....	*13,500
Rubber & Guayule Agency, Inc.....	*60,000
Henderson & Korn.....	*135,000
Arnold & Zeiss.....	*130,000
APRIL 1.—By the <i>Vaderland</i> —Antwerp:	
Meyer & Brown.....	*260,000
Rubber Trading Co.....	*2,200
APRIL 1.—By the <i>Noordam</i> —Amsterdam:	
Meyer & Brown.....	*22,500
Rubber Trading Co.....	*5,000
Various.....	*17,000
APRIL 1.—By the <i>Minnetonka</i> —London:	
Meyer & Brown.....	*31,000
Ed. Maurer.....	*13,500
Henderson & Korn.....	*120,000
I. H. Rossbach, Bros. & Co.....	*9,000
Ed. Boustead & Co.....	*15,000
Johnstone, Whitworth & Co.....	*235,000
Charles T. Wilson.....	*210,000
General Rubber Co.....	*290,000
Goodyear Tire & Rubber Co.....	*30,000
APRIL 3.—By the <i>City of Corinth</i> —Colombo:	
Meyer & Brown.....	*67,000
Rubber & Guayule Agency, Inc.....	*11,200
Adolph Hirsch & Co.....	*3,000
W. Stiles.....	*5,000
Robinson & Co.....	*19,000
W. R. Grace & Co.....	*67,000
Henderson & Korn.....	*40,000
APRIL 3.—By the <i>St. Louis</i> —Southampton:	
Earle Bros.....	*7,000
Robinson & Co.....	*37,500
Arnold & Zeiss.....	*28,000
Ed. Maurer.....	*3,500
Various.....	*252,000
APRIL 4.—By the <i>President Lincoln</i> —Hamburg:	
Meyer & Brown.....	*47,000
Ed. Maurer.....	*7,000
Henderson & Korn.....	*13,500
Rubber & Guayule Agency, Inc.....	*4,000
APRIL 6.—By the <i>Kaiserin Auguste Victoria</i> —Hamburg:	
Johnstone, Whitworth & Co.....	*2,500
Rubber & Guayule Agency, Inc.....	*3,000
APRIL 6.—By the <i>Moltke</i> —Hamburg:	
Various.....	*15,000
APRIL 6.—By the <i>Meinhardt</i> —London:	
Meyer & Brown.....	*4,500
Robinson & Co.....	*9,000
Earle Bros.....	*2,500
W. R. Grace & Co.....	*36,500
Henderson & Korn.....	*90,000
Adolph Hirsch & Co.....	*22,500
Charles T. Wilson.....	*80,000
Arnold & Zeiss.....	*33,500
Johnstone, Whitworth & Co.....	*200,000
United Malaysian Rubber Co.....	*2,000
W. Stiles.....	*1,000

Rubber & Guayule Agency, Inc.	*11,200	
Rubber Trading Co.	*4,500	
Rex Products Co.	*5,000	
Johnstone & Korn	*10,000	
Various	*115,000	*720,800

APRIL 9.—By the <i>Kroonland</i> =Antwerp:		
Meyer & Brown	*300,000	
Arnold & Zeiss	*17,000	
Rubber & Guayule Agency, Inc.	*2,200	
Various	*9,000	*339,700

APRIL 10.—By the <i>Prinzess</i> =Amsterdam:		
Meyer & Brown	*8,500	
Various	*10,000	*18,500

APRIL 9.—By the <i>Oceanic</i> =Southampton:		
Meyer & Brown	*9,000	
W. Stiles	*3,000	
Ed. Maurer	*15,000	
W. R. Grace & Co.	*3,500	
Johnstone, Whitworth & Co.	*33,500	
Arnold & Zeiss	*200,000	
Charles T. Wilson	*10,000	
Henderson & Korn	*238,500	
Goodyear Tire & Rubber Co.	*125,000	*637,500

APRIL 11.—By the <i>Cestrian</i> =Liverpool:		
Henderson & Korn	*40,000	

APRIL 11.—By the <i>Northwick</i> =Amsterdam:		
Meyer & Brown	*7,000	

APRIL 13.—By the <i>St. Paul</i> =Southampton:		
Arnold & Zeiss	*42,000	
Rubber Trading Co.	*20,000	
Charles T. Wilson	*28,000	
Ed. Maurer	*9,500	
Various	*237,000	*336,500

APRIL 13.—By the <i>Rappenfels</i> =Colombo:		
Meyer & Brown	*73,500	
W. Stiles	*17,000	
Arnold & Zeiss	*60,000	
W. R. Grace & Co.	*35,000	
Henderson & Korn	*45,000	
Robinson & Co.	*9,000	
Ed. Maurer	*6,000	
Various	*111,500	*357,000

APRIL 13.—By the <i>Esmerald Castle</i> =Singapore:		
Meyer & Brown	*9,000	
Arnold & Zeiss	*86,000	
Henderson & Korn	*55,000	
Ed. Maurer	*40,000	
Ed. Bonstead & Co.	*2,500	
Various	*307,500	*500,000

APRIL 14.—By the <i>Louisa</i> =Havre:		
Various	*7,000	

APRIL 14.—By the <i>Rotterdam</i> =Amsterdam:		
Meyer & Brown	*22,000	
Various	*10,000	*32,000

APRIL 15.—By the <i>Finland</i> =Antwerp:		
Meyer & Brown	*120,500	
Arnold & Zeiss	*85,000	
General Rubber Co.	*20,000	
Rubber & Guayule Agency, Inc.	*16,000	
Various	*40,000	*281,500

APRIL 15.—By the <i>Erroll</i> =Singapore:		
Meyer & Brown	*9,000	
Arnold & Zeiss	*125,000	
Ed. Maurer	*50,000	
Henderson & Korn	*95,000	
Ed. Bonstead & Co.	*11,000	
Haslam & Co.	*2,000	
Robinson & Co.	*3,500	
Various	*140,000	*435,900

APRIL 16.—By the <i>Virginia</i> =Havre:		
Michelin Tire Co.	*50,000	

APRIL 16.—By the <i>Osprey</i> =Southampton:		
The B. F. Goodrich Co.	*192,000	
Goodyear Tire & Rubber Co.	*37,000	
Robinson & Co.	*22,500	
W. R. Grace & Co.	*8,000	
Rubber Trading Co.	*25,000	*284,500

APRIL 16.—By the <i>Prinzess</i> =Amsterdam:		
Meyer & Brown	*55,000	
H. W. Peabody & Co.	*4,000	
Arnold & Zeiss	*10,000	
W. R. Grace & Co.	*35,000	
Robinson & Co.	*20,000	
W. Stiles	*25,000	
Henderson & Korn	*30,000	
Various	*10,000	*201,500

APRIL 16.—By the <i>Prinzess</i> =Amsterdam:		
Arnold & Zeiss	*17,000	
Ed. Maurer	*17,000	
Robinson & Co.	*3,500	*92,500

APRIL 16.—By the <i>Prinzess</i> =Amsterdam:		
Meyer & Brown	*185,000	
Arnold & Zeiss	*80,000	*265,000

APRIL 16.—By the <i>Prinzess</i> =Amsterdam:		
Henderson & Korn	*14,000	
Ed. Maurer	*2,000	
Rubber & Guayule Agency, Inc.	*10,000	*26,000

APRIL 16.—By the <i>Prinzess</i> =Amsterdam:		
Charles T. Wilson	*2,200	
Rubber & Guayule Agency, Inc.	*7,000	
Ed. Maurer	*16,000	
Henderson & Korn	*30,000	
Arnold & Zeiss	*11,200	
Various	*10,000	*96,400

APRIL 20.—By the <i>Dunbar</i> =Singapore:		
The B. F. Goodrich Co.	*130,000	
Henderson & Korn	*35,000	
Ed. Maurer	*10,000	
Various	*65,000	*250,000

APRIL 22.—By the <i>Mesaba</i> =London:		
Henderson & Korn	*215,000	
General Rubber Co.	*95,000	
Johnstone, Whitworth & Co.	*38,000	
Charles T. Wilson	*33,500	
Various	*25,000	*406,500

APRIL 23.—By the <i>Westend</i> =Amsterdam:		
Robinson & Co.	*8,000	

APRIL 23.—By the <i>Potsdam</i> =Amsterdam:		
Rubber Trading Co.	*32,000	
Various	*23,500	*54,500

APRIL 23.—By the <i>Philadelphia</i> =Southampton:		
Meyer & Brown	*16,000	
W. Stiles	*11,200	
Robert Badenhop	*11,000	
Charles T. Wilson	*12,500	
Arnold & Zeiss	*20,000	
Earle Bros.	*3,000	
Rubber Trading Co.	*3,500	
Henderson & Korn	*20,000	*97,400

AFRICAN.

POUNDS.

MARCH 21.—By the <i>President Grant</i> =Hamburg:		
Various		2,200

MARCH 23.—By the <i>Cedric</i> =Liverpool:		
Henderson & Korn	11,200	
Earle Bros.	2,000	
Various	11,200	24,400

MARCH 23.—By the <i>Carmania</i> =Liverpool:		
Arnold & Zeiss	33,500	
Johnstone, Whitworth & Co.	5,000	
Henderson & Korn	5,000	
W. Stiles	2,200	
Various	5,000	50,700

MARCH 30.—By the <i>Pennsylvania</i> =Hamburg:		
Meyer & Brown	35,500	
Henderson & Korn	35,000	
Ed. Maurer	33,500	
Arnold & Zeiss	50,000	
Rubber & Guayule Agency, Inc.	10,000	
Various	10,000	182,000

APRIL 4.—By the <i>President Lincoln</i> =Hamburg:		
Rubber & Guayule Agency, Inc.	30,000	
Various	32,500	62,500

APRIL 6.—By the <i>Kaiserin Augusta Victoria</i> =Hamburg:		
--	--	--

Arnold & Zeiss	35,000	
Ed. Maurer	2,200	
Rubber & Guayule Agency, Inc.	5,200	
Various	10,000	

APRIL 6.—By the <i>Prinzess</i> =Liverpool:		
Meyer & Brown	11,200	
Arnold & Zeiss	9,000	
W. R. Grace & Co.	5,000	
Johnstone, Whitworth & Co.	2,200	27,400

APRIL 8.—By the <i>Minnewaska</i> =London:		
Arnold & Zeiss	17,000	
Various	17,000	34,000

APRIL 8.—By the <i>Prinzess</i> =Antwerp:		
Arnold & Zeiss	27,000	
Various	40,000	67,000

APRIL 8.—By the <i>Prinzess</i> =Havre:		
Arnold & Zeiss	13,500	

APRIL 11.—By the <i>Cestrian</i> =Liverpool:		
General Rubber Co.	25,000	
Earle Bros.	2,200	
Various	45,000	72,200

APRIL 13.—By the <i>St. Paul</i> =Southampton:		
Meyer & Brown	6,000	
Various	28,000	34,000

APRIL 14.—By the <i>Louisa</i> =Havre:		
Meyer & Brown	47,000	

APRIL 15.—By the <i>Finland</i> =Antwerp:		
General Rubber Co.	8,500	
Rubber & Guayule Agency, Inc.	4,500	
Various	32,000	45,000

APRIL 16.—By the <i>Niagara</i> =Havre:		
Various		60,000

APRIL 17.—By the <i>Canadian</i> =Liverpool:		
Johnstone, Whitworth & Co.	22,000	
Arnold & Zeiss	6,000	
Various	40,000	68,000

APRIL 18.—By the <i>Rochambeau</i> =Havre:		
Johnstone, Whitworth & Co.	40,000	
De Lagotellerie	7,500	47,500

APRIL 20.—By the <i>New York</i> =Southampton:		
Various		2,500

APRIL 20.—By the <i>Graf Waldersee</i> =Hamburg:		
Ed. Maurer	6,000	
Various	30,000	36,000

APRIL 23.—By the <i>Philadelphia</i> =Southampton:		
Arnold & Zeiss		85,000

APRIL 20.—By the <i>Lapland</i> =Antwerp:		
Arnold & Zeiss	13,500	
Various	11,200	24,700

APRIL 20.—By the <i>Amerika</i> =Hamburg:		
Meyer & Brown	22,000	
Henderson & Korn	9,000	
Ed. Maurer	30,000	
Arnold & Zeiss	25,000	86,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—MARCH, 1914.

Imports:	Pounds.	Value.
India rubber	15,054,523	\$7,603,473
Balata	117,417	\$4,726
Gutta percha	335,143	\$7,485
Gutta jelutong (Pontianak)	1,968,086	\$5,772
Total	17,475,169	\$7,801,456

Exports.	Pounds.	Value.
India rubber	53,468	\$29,624
Balata	32,081	\$6,856
Reclaimed rubber	87,481	13,305
Rubber scrap, imported	1,333,815	\$116,910
Rubber scrap, exported	364,331	44,002

BOSTON ARRIVALS.

IMPORTS IN MARCH, 1914.

	Pounds.	Value.
Gutta jelutong	75,366	\$35,290
Gutta percha	79,466	10,533
India rubber	225,492	108,858

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING FEBRUARY, 1914 (IN KILOGRAMS).

NEW YORK.

EUROPE.

EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Gross.
Zarges, Berringer & Co.	235,689	82,136	144,489	99,555	561,869	464,402	48,516	45,234	123,196	681,348	1,243,217
General Rubber Co. of Brazil	17,495	2,336	37,958	41,785	99,574	143,402	2,000	11,636	51,939	229,006	328,580
J. Marques	70,560	39,188	129,926	73,090	312,764	183,648	1,000		93,940	278,608	591,372
Seligman & Co.			2,924	23,370	26,294	18,340		2,036	8,143	28,518	54,812
Suarez Hermanos & Co., Ltd.	26,855	3,205	3,624		33,684	218,917		6,093	199,649	424,659	458,343
De Lagotellerie & Co.	6,859				6,859	5,780				5,780	12,639
Pires Teixeira & Co.	23,460	5,100	69,610	280	98,450	38,420				38,420	136,870
Sundry exporters	22,900	4,970	9,020	6,560	43,450	39,947	6,689	6,246	14,292	67,174	110,624
Itacoatiara, direct						11,400	1,510	9,110	6,300	28,320	28,320
	403,818	136,935	397,551	244,640	1,182,944	1,124,256	79,764	80,354	497,459	1,781,833	2,964,777
Manaos, direct	173,899	47,040	91,821	122,907	435,667	571,378	69,743	90,726	333,226	1,065,073	1,500,740
Iquitos, direct	42,816	4,091	15,150	167,468	229,525	65,876	4,401	24,309	54,813	149,399	378,924
Total, February, 1914	620,533	188,066	504,522	535,015	1,848,135	1,761,510	153,908	195,389	885,498	2,996,305	4,844,441
Total, January, 1914	914,867	202,392	692,568	238,354	2,048,181	1,094,577	146,610	167,156	291,274	1,699,617	3,747,798



Vol. 50.

MAY 1, 1914.

No. 2.

TABLE OF CONTENTS.

Editorials:

The Tremendous Toll That Rubber Has Paid.....	397
George F. Whitmore—An Appreciation.....	397
The Great Increase in Foreign Cotton.....	397
The London Rubber Show in June.....	398
Turning Philanthropy Into Profits.....	399
Minor Editorials.....	399
What the Rubber Chemists Are Doing.....	400
The Rubber Crisis in Brazil—II.....	400
Rubber Gathering in the Peruvian Montana.....	406
Colonel Chaves and the Acre Rubber Tax.....	406
Dr. Huber's Last Four Articles on Hevea.....	407
Report of the Brazilian Mixed Commission.....	408
Official India Rubber Statistics for the United States.....	409
Shall We Lose the Panama Trade?.....	409
The Only Heveas in Panama.....	414
Annual Meeting of Rubber Club of America.....	416
Rubber Club Wants Further Statistics.....	419
Rubber Sundries Manufacturers Dine.....	420
The Editor's Book Table.....	421
New Trade Publications.....	423
The Rubber Trade in Akron.....	424
The Rubber Trade in Boston.....	425
The Rubber Trade in Chicago.....	425
Using Candy Molds of Rubber.....	427
The Rubber Trade in Rhode Island.....	427
The Rubber Trade in Trenton.....	428
The Rubber Trade on the Pacific Coast.....	428
India Rubber Goods in Commerce.....	430
The Development and Design of a Machine for Producing Plantation Rubber by the Brazilian Smoking Method.....	431
Rubber Goods Manufacturing Co.'s Fifteenth Annual Meeting.....	433
The Obituary Record.....	434
Latest Report on Navy Specifications.....	435
News of the American Rubber Trade.....	436
New Rubber Goods in the Market.....	436
New Machines and Appliances.....	444
The India Rubber Trade in Great Britain.....	446
Prizes at the London Rubber Show.....	447
Some Rubber Interests in Europe.....	448
The Rubber Trade in Japan.....	449
Rubber Notes from British Guiana.....	449
Some Rubber Planting Notes.....	451
Recent Patents Relating to Rubber.....	453
Review of the Crude Rubber Market.....	456

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER

Chamber of Commerce.]

	1913.	1914.
To Great Britain.....pounds	2,436,562	3,832,503
To United States.....	1,840,795	1,390,780
To Belgium.....	457,506	1,432,240
To Australia.....	74,871	20,160
To Japan.....	50,978	96,803
To Germany.....	23,479	352,128
To Italy.....	22,400	
To Austria.....	20,419	
To Holland.....	500	
To Russia.....		98,482
To France.....		58,096
To Straits Settlements.....		35,815
To India.....		500

Total 4,927,570 7,317,507

(Same period, 1912—2,812,384; same period, 1911—1,105,293 pounds.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 505,361 pounds—376,392 pounds from the quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.)

Chamber of Commerce.]

	1912.	1913.
To Great Britain.....pounds	8,176,523	15,841,126
To United States.....	4,833,085	6,417,236
To Belgium.....	1,315,298	4,214,736
To Australia.....	250,326	462,473
To Germany.....	210,021	417,946
To Austria.....	85,782	31,434
To Japan.....	81,456	312,868
To Canada.....	22,078	
To France.....	11,568	32,958
To Italy.....	7,744	44,784
To Russia.....	4,173	101,116
To Holland.....	2,282	992
To India.....	700	1,881
To Norway and Sweden.....	39	
To Straits Settlements.....		153,795

Total 15,001,075 28,033,345

The export figures of rubber for 1913 given in the above table include the imports re-exported. To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date deduct the quantity of imports shown in the import table from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORT FROM MALAYA

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, March 11.	Malacca, Feb. 28.	Penang, Feb. 28.	Port Swet- tenham, March 15	Total.
Great Britain...pounds	4,383,308	886,290	3,243,867	5,309,005	13,822,470
Continent.....	335,992		116,400	689,046	1,141,438
Japan.....	194,844				194,844
Ceylon.....	71,027		174,000	363,594	608,621
United States.....	2,149,661		182,933		2,332,594
Australia.....	10,741				10,741
Total, 1914.....	7,145,573	886,290	3,717,200	6,361,645	18,110,708
Total, 1913.....	4,806,621		2,110,666	6,520,463	13,437,750
Total, 1912.....	2,161,478		847,722	4,687,124	7,696,324
Total, 1911.....	1,266,855		330,267	2,479,933	4,077,055

LOCK THE TIRES OR WATCH THEM.

It is apparently a dangerous thing to leave tires unwatched on Broadway, New York. A few nights ago an automobile dealer left his car unattended for a few minutes on upper Broadway to run into his office. When he returned to the car he found that two spare tires had disappeared. This occurred in one of the lightest spots along that well lighted thoroughfare and within easy observation of several traffic policemen. When the owner of the car entered his complaint with the nearest police officer, who was standing not far away, he was told, by way of consolation, that he had no business to leave his car. It is a good idea, in most large cities, to have spare tires chained to the car or else duly watched.

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MARK IS STAMPED ON
THE INSIDE.



INDIA RUBBER WORLD

FOUNDED
1889

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HEVEA BRASILIENSIS

GUTTA-PERCHA
COCOS GUTTA

Edited by HENRY C. PEARSON—Offices, No. 25 West 45th Street, NEW YORK.

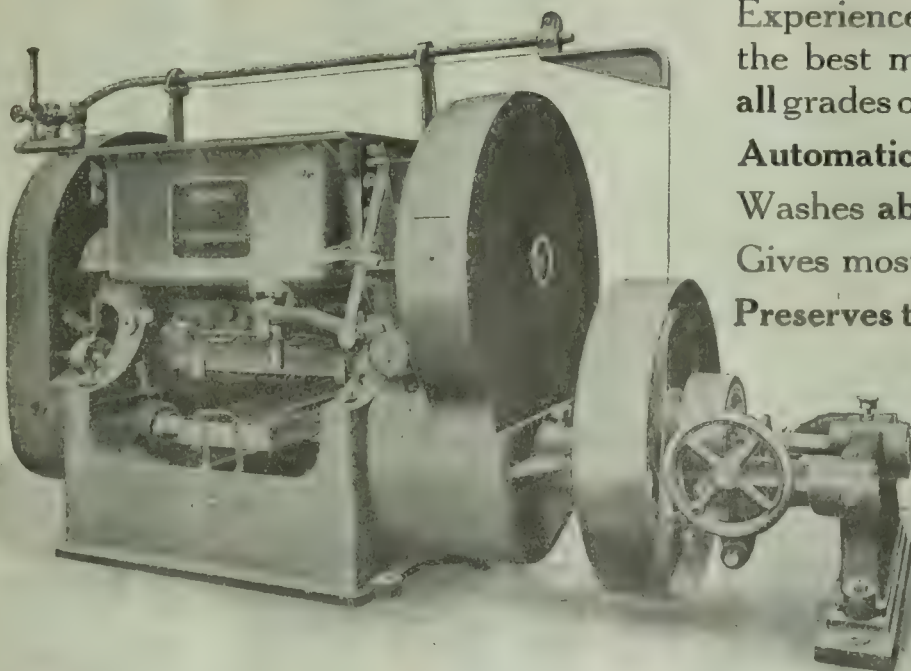
Vol. L. No. 3.

JUNE 1, 1914.

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Write for Bulletin W-161

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TABLE OF CONTENTS ON LAST PAGE OF READING.**THE RUBBER CONGRESS IN BATAVIA.**

MENTION has been made a number of times in these columns of the International Rubber Exhibition and Congress to be held in Batavia, Java, from September 7 to October 10 next. The preliminary program of that event will be found on another page of this issue. At first blush this exhibition, which is to continue for more than a month, might seem rather an ambitious undertaking for the rubber planters of Java and the neighboring islands, but it must be borne in mind that the rubber plantations in Dutch East India, scattered over Sumatra, Java and Borneo, represent an investment of \$90,000,000 and are rapidly growing in extent and importance.

The promoters of this congress have secured a number of the best known rubber men of Europe as speakers on that occasion. Incidentally it might be added that the editor of THE INDIA RUBBER WORLD has accepted an invitation to deliver an address on the second day of the conference on "What Manufacturers Desire in Crude Rubber," and he has also contributed a substantial and suitable solid silver cup—described in more detail in another column—to be offered at that exhibition for the best system of extracting gutta percha. For quite a

good many years after the inception of the Eastern plantation idea American manufacturers took but scant interest in the subject; but in view of the fact that today the largest plantation of the East belongs to Americans—the United States Rubber Co.'s 35,000 acres in Sumatra—it is very evident that the day of American indifference to Eastern planting matters is past.

WILL THE NEW BANKING ACT HELP CRUDE RUBBER FINANCING?

IT has long been felt that the present system of financing rubber importations from South America through London banking houses is unnecessarily indirect and expensive, but hitherto the law has not permitted an American bank to accept a draft payable at some future time, and this situation has greatly interfered with our foreign trade and placed a burden upon the financing of American imports. During the last two years we have imported from the Amazon about 90,000,000 pounds of rubber, with a value of about \$60,000,000. The extra cost of doing this through a London bank—that is, the commission charged at that centre—has ranged from one-quarter to one-half per cent., making a tax on American rubber manufacture during the last two years of about \$200,000. This of course is not a momentous matter compared with the \$225,000,000 which represents the annual value of our finished product, but at the same time it seems like an unnecessary expense.

One provision in the Federal Reserve Act recently passed by Congress aims to remedy this situation, as it permits American banks to accept drafts dated ahead in order to assist the financing of our import and export business. But it appears to be the general opinion among New York rubber importers that no immediate change will take place in our present method of paying for purchases of South American rubber.

There are two requisites for international banking—credit and machinery. And both of these the English banks possess. It has so long been the custom of South Americans to carry on their foreign trade through English banks that they are not likely without good cause to depart from the beaten path. And there is another reason why the English banker would be difficult to dislodge—and that is the fact that while the United States takes about \$125,000,000 worth of the annual Brazilian exports, or over one-third of the whole, we supply that country with only about \$40,000,000 worth of goods annually, or about one-fifth of its entire imports, leaving Europe to supply the rest. As long as this great dis-

parity in favor of England and the Continent continues the present banking system is likely to remain. Some day undoubtedly we will transact our financial operations, in the purchase of Amazon rubber, directly between New York and Pará, but not until the value of the Brazilian imports from the United States more nearly approaches the value of American imports from that country.

THE NEW MARKET OPENED BY THE PANAMA CANAL.

MUCH has been said about the vast new market for American goods which will be opened up on the completion of the Panama Canal, and the manufacturers of the United States have been entreated to make ample preparations to occupy this market before it has been preempted by our active rivals across the water. This is good advice and American goods ought certainly to be much more largely in evidence on the West Coast of South America than they ever have been along its Atlantic side.

On the surface, at least, it looks as if this new market were most promising. Here is a vast stretch of territory extending from the Pacific to the Andes, and over the Andes, and reaching from the Isthmus of Panama to the Strait of Magellan—a distance of almost 5,000 miles—and occupied by about fifteen million people, who hitherto have been so remote as to be of comparatively little interest to us, but who now in the matter of trade are to be brought almost to our doors. This would certainly seem like a great opportunity for extending our commerce.

But here is an instance where enthusiasm should be tempered with discretion, for these fifteen million people are not altogether like an equal number of our own countrymen. In fact the situation is far otherwise. To go a little into detail—there is Colombia with five million inhabitants, only 300,000 of whom are white, the rest being of mixed breeds or Indians and negroes; and Ecuador with 1,500,000 people, only 150,000 of them being white and one million of them being Indians;—and so on down the coast. Of the fifteen million the Caucasian element represents about one-eighth. The mestizos or mixed race constitute a little less than one-half, while the rest of this aggregation—or nearly one-half—is composed of negroes and Indians. Obviously, this is quite a different market from any that the American manufacturer is familiar with. Its ability to absorb manufactured goods in great variety and in large quantities has yet to be proved.

The opening of the canal will undoubtedly substan-

tially increase the prosperity and the buying power of our neighbors along the West Coast of South America, and these communities will begin to develop as never before, but in view of the ethnological character of a vast majority of these people this development is not likely to be phenomenally rapid. It seems quite safe to predicate, therefore, that while the Panama Canal will assuredly open up a new and ever expanding market for American goods, it is a market that must be investigated with care and entered with considerable circumspection.

THE TIRE BRINGS BACK THE WAR CHARIOT.

WHEN Achilles and Agamemnon and the rest of that breed of hard hitters went forth for a brisk afternoon's work they mounted their war chariots and started for the fray on wheels; but later the war chariot fell into conspicuous desuetude—it was too unwieldy and too uncomfortable—and for many centuries the faithful horse has been looked to to provide military leaders with the necessary transportation.

But this mess in Mexico, if it has effected no other purpose, has at least served to show that the war chariot is back in the game; changed a little, to be sure, depending on gasoline for its propulsion and on the rubber tire to give it smooth passage over the ruts and rocks. Early in the proceedings both the Federals and the Rebels got possession of as many high-power autos as their cash and credit could secure, and these machines—about a hundred of them, all told, in the two armies, and practically all of American make and shod with American tires—have been in constant use for the swift mobilization of the commanders and their staffs.

As the motor car has pushed the horse—a fine fellow, but with obvious limitations—out of many of his peaceful vocations, so it seems destined to crowd him out of his proud place at the head of the advancing column. This is a move in the right direction, for war, as General Sherman used to say, is nasty business; and if men conclude that nothing will do but they must get out their guns and pump away at one another it is much better to leave the unoffending horse out of it and use as a substitute target the rubber tire, which when punctured to pieces under the deadly fire the manufacturer stands ready and able, and extremely willing, to replace.

HOW THE RUBBER COUNTRY SERVED THE COLONEL.

THE foremost American citizen—at least in private life—has just emerged from a three months' jaunt through the rubber country of the Madeira. To be sure,

he did not embark on that tour of exploration primarily to acquire information about the *Hevea Brasiliensis*, but undoubtedly when the interesting story of his travels is told it will be found to contain much of importance on the flora as well as the fauna of that hitherto unexplored region. But even before the appearance of this exciting chronicle his experience is certainly most illuminating in regard to the ability of the white man to endure the multi-form hazards of that wild domain.

Here is a man with a constitution of iron and nerves of steel, who led the fighting regiment of the Spanish war and returned home, as he expressed it at the time, "disgracefully fat"; who guided the ship of state for seven years through continuous tumult and never lost an hour's sleep; who spent a winter in the heart of Africa and hardly once removed the cork from his pocket flask of health invigorator—and yet after a few weeks along the waters that feed the Amazon he emerges with forty or fifty pounds of good American avoirdupois left in the jungle, celebrates his arrival in New York harbor by a succession of chills and comes down the gang-plank leaning on a cane. Not that anybody need to fear that this distinguished American is permanently disabled—for it would take more than three months in any locality known to geography or mythology to efface or even seriously curtail the doughty Colonel—but his sojourn on the unknown tributaries of the Amazon certainly left its marks.

This emphasizes the tremendous advantage which the Eastern plantations enjoy over the wild rubber districts of Brazil, for in the plantation country the white man not only can live but can pursue his vocations in as regular a fashion and under as comfortable conditions as at home, while along the waters of the Amazon the native must gather the rubber unattended, as no white man can long keep him company there.

But this may all be changed some day. This clean-up idea that has lately seized upon our American municipalities is not a local fad; it is steadily moving around the globe, and sanitary science is attacking one plague spot after another. Some day it will undoubtedly reach the basin of the Amazon, and white men will then be able to work in those vast rubber districts without the perpetual presence of the dread and deadly fever.

THE INCIDENTAL INJUSTICE OF JUSTICE.

IT is certainly difficult, if not quite impossible, so to frame a law, no matter how salutary in its general effect, that it will not operate to the detriment of some

innocent person. If the law is intended for the protection of the good it is quite likely to extend some protection to the evil; and if its intent is the punishment of the vicious it often happens that some of the virtuous also feel its punitive possibilities.

The statute enacted in the State of New York some time ago compelling large corporations to submit their lists of stockholders to any stockholder who might ask to see them was undoubtedly most wholesome in its intention, its purpose being part of the general plan to make large corporations do their work in the open, where investors and possible investors may get some idea of their operations; but this enactment has given rise to a new industry which is bound to be harmful in proportion as it is successful. A number of people, either individually or in partnership, have purchased a single share of stock in the big corporations (this entailing practically no expense, as the share can be sold at practically the same figure when it is no longer needed) and, armed with this certificate, have demanded the company's list of stockholders. This list has then been copied and sold at a very profitable figure to that class of operators who supply the public with shares in imaginary rubber plantations and non-existent oil wells. So this statute, intended to give a proper publicity to the operations of the giant corporations, in reality, as one of its minor effects, compels them to expose their stockholders to all the wiles of the conscienceless promoter and the purveyor of assorted gold bricks.

RETALIATING ON THE PEDESTRIAN.

THE annual crop of automobile laws is now about in, and it compares quite favorably with former years. Most of the State legislatures have put up their shutters for the year and the lawmakers gone back to their confiding constituents for a season of well-earned repose. During the sessions of the legislatures recently closed 182 bills were introduced affecting the status and regulating the activities of the motorist, but fortunately only 23—hardly more than one-eighth of them—passed, and none of them was of a character greatly to distress the automobilist or those interested in his well being. Most of these acts related to the use of lights, the regulation of speed, registration and other matters which properly come within the scope of legislative action. Accordingly the product of the law-producing machinery for the season of 1913-14 may be placed under the general classification of "Might Be Worse."

But notwithstanding the inoffensive nature of this legislation word comes from a Middle West city that the motorists of that place propose some retaliative measures aimed at the non-motorists. The Auto Club of this particular city is bending its energies to have an ordinance passed making it a misdemeanor for the pedestrian to cross a street anywhere except at the corners. That is, if Mrs. Smith lives in the middle of the block and her daughter Jane just across the street, and Mrs. Smith wants to run over and see how matters are progressing at Jane's, and she cuts across instead of trudging to the corner and back again, she is liable to arrest, fine and probably imprisonment. The contention of the automobile club is this—that pedestrians never get run over at the corners, as the chauffeur at that point is on the lookout, but that accidents almost invariably occur between corners, as the chauffeur's vigilance is then relaxed.

Of course one sympathizes with the motorist, who naturally dislikes to run over more persons than is necessary, but it is quite probable that a city ordinance forbidding pedestrians the use of the streets except at the regular corner crossings would hardly stand the test of constitutionality, for altho the owners of autos purchase in the course of the year \$125,000,000 worth of tires and are therefore entitled to profound consideration, the plain people who plod about on the humble feet that nature gave them are still generally held to have some rights to the highways. At any rate there are a great many of these plain people and it will not answer to get too jaunty with them.

BOYCOTTING OLD JOHN BARLEYCORN.

THAT ancient and obstreperous institution, the saloon, which has viewed with serene indifference all efforts of the moralist to dislodge it, is now beating an ignominious retreat before the ruthless advance of the efficiency expert. The railroads discovered some years ago that a man with a few assorted drinks diffused through his works was a poor person to trust a trainload of human freight to. Then manufacturers began to suspect that alcohol was of no particular efficacy in helping a workman run a complicated machine.

The American Foundrymen's Association, through its Committee on Prevention of Accidents, is trying to drive the saloon to a wholesome distance from all foundries. The committee is gathering records of injuries resulting from the proximity of bars to the shops, and every evidence of the loss of life and limb among foundrymen attributable to too easy access to the saloon will be laid before the legislatures of the different states.

This is a subject of just as much importance to manufacturers of rubber goods as to those who work in steel and iron. Every plant where men and machinery are operating together in the serious work of useful production—and particularly every factory where the work is at all hazardous and where carelessness may be attended with disastrous results—should have a good wide safety zone around it within which the Demon Rum should never be permitted to show horn or hoof.

RUBBER WORKS FOR THE HUMAN INTERIOR.

HIGHLY exhilarating reports come from abroad to the effect that a learned surgeon associated with the University of Paris has succeeded by certain experiments on human subjects in showing "the feasibility of grafting india rubber on living tissue." Two illustrations are cited, one where the experimenter—according to the report—inserted a thin layer of rubber between the bone and flesh of a finger and another where—the patient evidently, after the manner of mankind, having some stomach distress—"a thick sheet of rubber grafted into the abdominal cavity gave absolute and permanent relief."

The average layman has become a little inclined to hesitate in accepting at their face value all the reports that come from the laboratories; he is rather disposed to label them "Valuable When Verified." Not that the researchers would be guilty of inaccuracy, but simply that the wonderful discoveries made behind laboratory doors sometimes take on strange and startling aspects when they leak out into the outside world. But if these latest reports should prove true, and if one's interior repairs could all be made by proper rubber adjustments, what a boon it would be! How fine when one is out of sorts to get back into condition again simply by the proper insertion of a rubber plate here and a rubber disc there and the introduction of a few assorted rubber tubes! Perhaps the day will come when a man who isn't quite up to the mark can go into the nearest rubber store and select for himself a new pericardium of Upriver fine and a guaranteed esophagus of Plantation pale cr pe. What would be more satisfying when a man is conscious of being a little under the weather than to take an afternoon off and have all his vitals revulcanized!

RE RUBBER THIEVING.

THE whole trade is to be congratulated upon the quiet persistence with which rubber manufacturers and wholesale scrap dealers report to the Rubber Stealings Committee of the Rubber Club offerings of suspicious lots of rubber. The alertness of the committee in following up the information thus secured is also to be commended. Their plan of dealing with the thieves, while bearing the impress of novelty, is perfectly sound and very far-reaching.

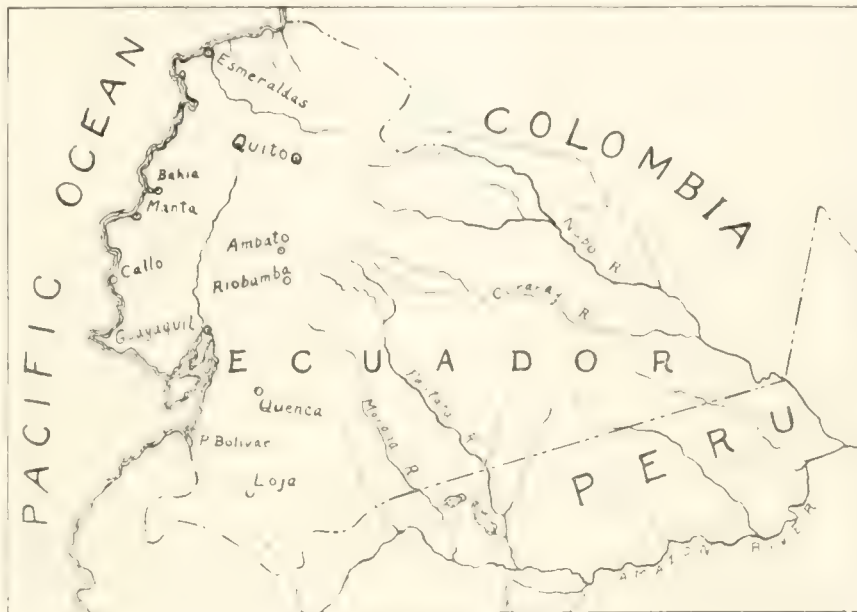
Foreign Trade Opportunities—II.

ECUADOR.

EVERY person of middle age remembers the alluring pictures of the Republic of the Equator which were in the geographies of his early youth. The palms and bananas at the foot of the mountains, the temperate zone productions of the higher slopes, the stunted trees still higher, the glistening snows with which the serried peaks were finished; the picturesque city of Quito, basking in the smiles of eternal spring, nearly two miles toward the sky, and in the background a volcano comfortably blowing out its clouds of smoke. We gave faith to the pictures, but it was much like a fairy tale, after all. It seemed as far away as the moon, as inaccessible as the north pole, and, with

most of us, that impression has remained to this day. As a matter of fact the chief city of Ecuador is not so far from New York as is Carson City, Nevada. The trip, first-class, can

be made for only a few dollars more. There are no difficulties in the way of the journey except such as imagination may make, and when the traveler arrives he will find that the old geographies have understated the marvels of this favored land. But, he asks, how is it to see the interior, the land of perpetual spring, the snowy peaks, the smoking volcanoes, the llamas, with their chins up in the air like an aristocrat visiting the slums? He admits that he is not now, as once, attracted by pictures of Ecuadorean travel—



OUTLINE MAP OF ECUADOR



COURTESY OF THE GUAYAQUIL HARBOR

SCENE IN THE HARBOR OF GUAYAQUIL, ECUADOR

mules gracefully filing around corners on ledges eighteen inches wide above chasms a thousand feet deep; or, perhaps, a dark, long-haired native crossing a similar abyss on a rope-bridge and carrying on his shoulders a chair in which sits a fair and meditative senorita. It is all right in pictures, he says, awfully interesting in reality, but he does not, as in his youth, hanker for the pleasure of personal experience. We may at once admit that he is entitled to his prejudices, and suggest that if he wishes to visit Quito in less trying fashion he may take a train on the newly-built railroad from the seaport, hand up his ticket to an American conductor, and, when he arrives at Quito, get off and go to a hotel. That is the way they do it now, and the distance is less than 300 miles by rail.

Ecuador has an area about as great as that of Nevada, with a population fifteen times as great. A majority of the population are of Indian, or partly Indian, descent, but wholly civilized,

These ships, if they are to run, must have freight both ways, and it is in order for American manufacturers to think about what they are going to send to the market that is waiting for them. From New York to Guayaquil, by the Strait of Magellan, is over ten thousand miles, a distance that will be reduced by the Panama route to less than three thousand miles. The present average of sixty-five days will be reduced to fourteen. Freight rates are bound to find a reasonable level. The commerce of Ecuador will be like the movement of a released spring, instantly responding when its bonds are removed. Production will be enormously stimulated, immigration on a large scale will be inaugurated and the demand for foreign goods multiplied many times.

At the present time the exports from the United States to Ecuador are mostly of a crude order—lumber, flour, kerosene and railroad materials. Such trade as there is, outside of the oil which is sold by a corporation always ready to look after business, may be said to be largely the result of accident, the outcome of orders for supplies for Americans who built the Guayaquil-Quito railroad. In more finished lines the United States occupies a very subordinate place, third, sixth or "also ran." The American business man still thinks of Ecuador as a semi-savage country, impossibly remote. He is governed by the geography of a bygone age, and his impressions are about as correct as those



Quito, Ecuador. The Market Place.

THE MARKET PLACE IN QUITO, ECUADOR.

and such peaceful occupations as agriculture and stock-raising furnish employment to the greater number. In the production of cacao Ecuador leads the world. This valuable article of food and drink was first exported from Ecuador less than forty years ago, but the planters have found such profit in it that the production has risen to a hundred million pounds. This supply, great as it is, is less than the consumption in the United States. Much of it goes to Europe, and then back across the ocean to us. There is no reason why this should continue. The crude product realizes to the grower only about ten cents a pound, and enters our ports duty free. When it reaches the consumer as chocolate, cocoa or cocoa-butter the price has been advanced by an average of 500 per cent. With the opening of the Panama Canal the seeds should be shipped directly from the plantation to the American factory, and the food products sold at reasonable cost. The ships that bring the cacao will bring also rubber, coffee, rice, cocoanuts and other tropic products, for which we have such insatiable need.

of the reader of the Ninth Edition of the Encyclopedia Britannica (superseded only last year) who is informed that the American Indian tribes living in the States west of the Mississippi river make use of horses, but that the tribes living east of that river do not do so because of the heavy forests with which the land is covered. The Ecuadorean, on the other hand, thinks that the United States, as a manufacturing or exporting country, must amount to very little. No traveling salesman ever comes to solicit his trade for an American house, and his dear friends, the European salesmen, are unanimous in informing him that the Americans are small potatoes and few in the hill.

Guayaquil is the port through which flows 90 per cent. of Ecuador's foreign trade. It has a population rising well toward a hundred thousand and, while in the past one of the most unsanitary of cities, is now putting its houses in order, that it may meet the demand of the world for modern sanitation at all its ports. The traveler who takes the railroad for Quito from this port passes through the reality of all the pictures of the old

geographies. He starts amid the palms and pineapples and gradually finds the one of oaks and pines, of barley and potatoes. He gazes on Chimborazo, towering to the stupendous height of 21,220 feet, and glittering with eternal snow. He sees Cotopaxi, the highest volcano in the world. This wonderful mountain is 19,500 feet high, the peak rising as a perfect cone, the last 4,000 feet covered with snow, while from the top of this "chimney of the world," as it has been aptly called, pour volumes of smoke and steam. In its ceaseless activity it is different from most volcanoes, and always gives the traveler his money's worth. It is only 35 miles from Quito, which is a city of 80,000, with a history dating back to nearly a hundred years before the landing at Plymouth Rock. It is rapidly taking up modern improvements, and is the seat of the culture and aristocracy of the republic. Again be it said, this city of wonders is nearer to New York than any of the cities

of our Pacific Coast. It is reached by means of modern first-class travel. Under the equator it has a mean temperature of

about 60 degs.—or about that of New York in the latter part of May. With its newly found accessibility Quito is certain to become an object of travel, and one of the greatest health resorts in the world.

An American manufacturer of rubber goods who has two or three months for his vacation would combine business with pleasure in an eminent degree if he would make the trip to Quito, keeping his eyes open while on the way. He would learn, as he cannot otherwise, what are the possibilities of trade in this newly-wakened land.

Several facts as to the development of the immediate future give suggestive hints. It is certain that roads will be

extended to reach the great forest regions of Eastern Ecuador, and these will furnish the country's supply of lumber, now largely imported, as well as furnishing cabinet woods for ex-



Courtesy of The Panama-Pacific Exposition, Washington.

DOCK SCENE AT DURAN, ECUADOR.



Courtesy of The Panama-Pacific Exposition, Washington.

IN FRONT OF THE MUNICIPAL BUILDING, QUITO, ECUADOR

port; the abundant water-power will supply opportunity for electrical development and manufacturing on a large scale, thus furnishing a market for great quantities of mechanical rubber goods. The primitive agriculture of the high country will improve and become far more profitable, with the growing cities and the rich coast land for markets. Still more profitable will be stock-growing; and the shepherds, herdsmen and farmers, who, since the time of the Incas, have lived and done nothing more, will now have money to spend. Is there any doubt that these people, whose only climatic enemy is the frequent occurrence of torrential rains—often cold and always wet—will be rejoiced to learn of the existence of rubber coats, which will insure dry skins while they are at their outdoor tasks? The American cocoa-drinker wants his breakfast drink; the planter



FIGURE 1. A RUBBER TAPPER.

of the coast wants the potatoes and mutton of his country's uplands; the grower of these commodities wants his rubber coat. So the cacao is sent across the ocean, ground, and sent back to America with freights and profits added; the rubber of the forests makes two journeys across the Atlantic, and the American manufacturers in both lines let this profitable business go by, and busy themselves looking after the "home market," like the islanders who made money by taking in each other's washing. The rapid rise of wealth in the cities and among the planters means a greatly increased market for druggists' sundries and articles of luxury, and this market can be found by visiting Guayaquil and the towns on the railroad running from that port. With newly found prosperity among the poorer classes, they also will have wants. An enterprising manufacturer can derive no mean profits from the sale of toys and rubber balls among these simple-minded people, who are passionately fond of their children, and ready to make any sacri-

fice for their pleasure. It is safe to say that the native tradesman with a stock of rubber animals of the type familiar in his own district, alpacas, mules and sheep, would drive a busy and exciting trade, and the demand would never cease so long as little brown-eyed babies continue to be born in the valleys of the Andes.

After all, Ecuador occupies but a small place on the map of South America, but the manufacturer who studies it will learn much of wider import. He will learn that a business man who communicates with a South American merchant must do so in the Spanish language. He will learn that politeness in such dealings is not only desirable, but *sine qua non*. He will find that brusqueness, swagger and boast will not do. He will find, too, that he must obey instructions in the matter of packing. The railroad has climbed the Andes, to be sure, but the mules are not out of a job. Freight to hundreds of villages must make the final stage in the old way. It is liable to spend hours in the midst of a tropic rain, and there are other vicissitudes which the merchant knows and seeks to guard against by his careful instructions. When he finds those instructions deliberately disregarded, the goods ruined and payment insisted upon, his erstwhile dear American friend has become "a wooden-headed pig of a Yankee," and it is hard not to sympathize with his frame of mind. In the matter of credit, too, the custom of the country must be followed. The South American wants our goods, but he is not obliged to have them. England, Germany and France still have something to sell, and if they take the care and extend the consideration which the American will not, they will get the trade and deserve it.

At present there are seven lines of steamships carrying freight from New York to Guayaquil and the west coast of South America. Three of these sail via the Strait of Magellan, and four carry cargo via Colon, where it is transshipped and reloaded at Panama on steamers calling at Guayaquil.

The Merchants' lines have sailings twice a month for Guayaquil via the Strait of Magellan.

The steamers carrying freight to Guayaquil via Panama are the Hamburg-American Line, sailing every week; the United Fruit Co.'s steamers, sailing twice a week, and the Royal Steam Packet Co.'s steamers, sailing once every two weeks. The Panama Railroad Co. has six sailings a month.

Freight rates are levied in one of two ways, at the option of the steamboat companies—either by weight or by bulk. The freight rates on manufactured rubber goods, including tires, belting, hose and rubber goods generally, are 68 cents per 100 pounds, or 38 cents per cubic foot, via the Straits route, and 85 cents per 100 pounds or 47 cents per cubic foot via the Panama route.

Two steamboat companies operate between Panama and Guayaquil—the Pacific Steam Navigation Co., with boats sailing every ten days, and the Compania Sud Americana de Vapores, with sailings every week but not on regular days.

RUBBER GROWERS' ASSOCIATION

The report to December 31, 1913, of the Rubber Growers' Association records the opening by that body of its own offices at 38 Eastcheap, in place of the agreement for accommodation with the London Chamber of Commerce. The membership roll now includes 368 companies and 171 individuals. A further extension of the membership is anticipated. Mr. Alfred Bonnin has been appointed secretary.

In order to meet its increased expenses, the association has had to readjust its subscription, which now stands at £1 1s. for an individual and £3 3s. for a company, with a further amount if the product for the 12 months under review has exceeded 100,000 pounds.

American Exports and Exporting Methods.

UNLESS attention is specifically drawn to it from time to time, the average person fails to comprehend the enormous business expansion this country has undergone in recent years, and, in particular, what a gigantic development has taken place in our exports to foreign countries. The Department of Commerce has just issued a statement which shows that the exports of merchandise from the United States made a greater advance during the last ten years than in the thirty years from 1873 to 1903. In 1873 the total exports were valued at \$568,000,000; in 1903 at \$1,485,000,000, and in 1913 at \$2,484,000,000—a gain of \$917,000,000 in the thirty years from 1873 to 1903, and of approximately \$1,000,000,000 in the ten years ending with 1913. The principal items contributing to the gain of the last decade were raw cotton and miscellaneous manufactures, chiefly of iron and steel, copper, wood, and mineral oil.

The leading articles of export for 1913 in their order of magnitude are shown by the following tabulation:

Raw cotton	\$575,000,000
Iron and steel	294,000,000
Bread stuffs	203,000,000
Meat and dairy products.....	161,000,000
Mineral oils	149,000,000
Copper	145,000,000
Wood manufactures	110,000,000
Coal and coke	71,000,000
Leather and leather goods.....	60,000,000
Tobacco	60,000,000
Cars and carriages	58,000,000
Cotton goods	56,000,000
Agricultural implements and machinery.	35,000,000
Fruits and nuts.....	34,000,000
Electrical machinery and appliances....	28,000,000
Chemicals, drugs and medicines.....	27,000,000
Naval stores	22,000,000
Vegetable oils	21,000,000
Paper and manufactures thereof.....	21,000,000
India rubber manufactures	14,000,000
Fertilizers	12,000,000

During the last ten years raw cotton easily maintained its position at the head of the list, but bread stuffs fell from second position in 1903 to third in 1913; meat and dairy products fell from third position to fourth, while iron and steel jumped from fourth to second. The gains made by some of these classes of exports during the ten years are almost incredible. The value of raw cotton exports increased \$196,000,000, or 52 per cent., a direct reflection of the increased consumption of cotton goods throughout the world. Iron and steel gained \$195,000,000 or fully 200 per cent., machinery and engines being the largest factors. Mineral oils increased 100 per cent., or \$76,000,000 in value; copper manufactures \$101,000,000 or 200 per cent., and manufactures of wood \$52,000,000 or 90 per cent. Food stuffs, however, of all kinds, showed a falling off, due to the increased consumption in the United States without a corresponding increase in the production.

Manufactured articles have in practically all instances, shown considerable gains. The most notable of these was in cars and carriages, which gained 500 per cent., due to the rapid development of the automobile industry during the last ten years. The electrical machinery exports were three times as large in 1913 as they were in 1903, while cotton goods and leather manufactures were twice as great. Paper manufactures and naval stores each increased about 50 per cent.; while india rubber manufactures were 2½ times as great as in 1903.

As to distribution, Europe has taken about 60 per cent. of the total exports, those in 1913 amounting to \$1,500,000,000, and those to other parts of the world, something less than \$1,000,000,000. To the countries of North America the exports for 1913 were \$601,000,000, two-thirds of which went to Canada. The exports to South America were \$147,000,000, chiefly to Argentina and Brazil. Exports to Asia were \$126,000,000, of which one-half went to Japan, one-fifth to China, and the remainder to Oceania, Australia and the Philippines. Africa received \$29,000,000 worth of American goods in 1913.

The methods used by American manufacturers in making exports and securing foreign business are varied and interesting. Naturally with such a stupendous increase in foreign trade as is revealed by the foregoing statistical comparisons, there must have grown up also a refined organization for the handling of this business. This is particularly true of the large corporations, but there has been an improvement also in business methods and facilities all down the line to the smaller manufacturers who are only occasional exporters. In the past there has been a great deal of criticism of American export methods and many examples of ignorance or indifference have been quoted. That such instances should occur is not at all surprising, for equally faulty business methods can easily be found in domestic trade.

Great Britain and Germany have long been held up as examples of excellent organization for handling foreign trade, but the organizations developed by some of the great American manufacturing concerns can safely hold their own in comparison with any of Europe. In fact, certain classes of manufacturers have built up a foreign business unequalled anywhere in the world—concerns, for instance, making typewriters, talking-machines and cash registers. A great deal was heard in the recent tariff discussions to the effect that American sewing-machines—for example—could be bought more cheaply abroad than at home; and the enormous profits American manufacturers were supposed to make out of this alleged discrimination against American consumers was one of the chief arguments of those who favored tariff reduction. Yet the true cause of this disparity was not discovered, for it lay in the fact that the particular company cited had developed the most intricate and far reaching system of selling and distributing ever known. Like some others, this company manufactures its machines where it can do so most cheaply, and a considerable part of the machines sold in foreign markets were not manufactured in the United States at all. Yet they were the product of American capital, initiative and organization and the profits were added to those of American industry. Agricultural implements, that formed only an occasional shipment 20 years ago, are now sent over by steamer loads in full cargo lots, while other great trade organizations, such as the steel corporation, the meat packers, and manufacturers of steam pumps, steam heating apparatus and electrical machinery, have developed a most scientific organization for handling their foreign trade. The spread of American shoe stores in Europe is but the extension abroad of policies inaugurated at home.

A direct personal acquaintance with foreign markets is not now deemed essential for the responsible heads of manufacturing concerns, but a full, intelligent comprehension of the requirements is absolutely indispensable. In fact, the head of the export department of almost any great manufacturing concern would have had to spend more time in traveling, in order to become acquainted with his field, than he could devote to the business itself, for to some of them there is hardly a country in the world that is not within their field.

But it must be remembered that there is a vast amount of

trade with foreign countries that comes from the smaller manufacturers, who may be big enough in their own fields, but who, when it comes to comparison with the giants already described, seem very small. Some manufacturers who could do so have not ventured into the foreign fields because of the belief that it required too great an extension of their organization, and others having secured some foreign business have allowed it to run itself, which, of course, has been just as unsuccessful a policy as it would be in the case of their domestic business.

The export commission houses have grown to be great helps to the American manufacturer. Every manufacturer who seeks export business at all is bound sooner or later to have relations with these exporters, and it is to his interest to have such relations. There has been a great deal of misapprehension regarding export commission houses and their province, especially by manufacturers located at some distance from New York. It has been said by those who are in a position to speak, that more than half of the entire export business of the United States today is due originally to the work and effort of export commission houses. Yet it would be surprising if into this field there had not crept numerous "fake" schemes. But this article has to do only with those of high character and standing. Export business as a whole has been up to recently, and indeed still is, such a very mysterious one to many American manufacturers, that it is by no means strange that a class of exporters devoting themselves solely to foreign relations should spring up, not always too scrupulous as to representations likely to induce profitable relations with manufacturers; but on the other hand, there are names so well known that they carry their own guarantee with them.

An export commission house, properly so-called, is really the buying agent in America for foreign merchants, whom it may persuade to entrust to it the placing of their orders for certain goods with the financing of such orders—that is, paying the manufacturers bills, and in turn collecting from the foreign merchants—and the shipping of the goods. It is easily seen how it would be to the interest of the foreign merchant to utilize the services of such a representative in American markets. A foreign merchant buying a great many different kinds of goods from various isolated manufacturers frequently finds it a convenience, no less than an economy, to forward all his orders under one cover to his American commission house, instead of writing a number of different letters to individual manufacturers and thereafter receiving a corresponding number of separate and distinct shipments, and paying for the goods in the different fashions individual manufacturers may require. Export commission houses are properly devoted to this sort of business only, and in fact many of them, by their articles of partnership or their bylaws, are prohibited from doing any business on their own account. They make their profit, or are supposed to do so, from the commission which they charge their foreign customers for attending to the details of placing orders, financing them, and collecting and forwarding the goods. This commission is usually $2\frac{1}{2}$ per cent. in the case of miscellaneous goods, but sometimes it is as high as 5 per cent. in special cases, while on the other hand, when very large single purchases are made it is sometimes as low as 1 per cent. or even less. Export commission houses are not supposed to receive remuneration of any sort for their own account from the manufacturers from whom they purchase the goods. As a matter of fact one of the chief arguments used by such houses to induce new foreign accounts is the claim that because of their very large purchases in practically all lines of American goods they are enabled to procure for their clients—that is, their foreign customers—better prices and discounts than such clients could themselves obtain, and that in return for the commission they charge their clients the latter receive the benefit of every discount and commission, cash or otherwise, which the exporter is able to obtain.

With the development of export business, the functions of

export commission merchants have in some cases been modified and extended. In addition to the export commission houses of the character noted above, there are others which combine with the original functions of such houses a selling organization of one sort or another. In this case, the export house either sends into foreign markets its own salesman, or maintains in one or several foreign markets its own branch offices with or without sample and salesrooms. Among the large first-class export houses in New York there exist examples of both of the classes already referred to. Some merchants of both classes confine their operations to certain parts of the world and some of them do business only in certain goods, but, generally speaking, export commission merchants are open to receive orders for any sort of American goods whatsoever from any foreign house of whose position and reputation they are assured.

Also to be included under export commission merchants are a few American houses which operate in certain foreign territories exclusively as manufacturers' agents, altho, strictly speaking, they are not commission houses in the sense generally understood. These agents take the agencies for certain manufacturers, usually limited in number and to one line of trade, and are supposed to act for them as their own salesmen and agents, usually in return for a salary and commission. Another class includes those who have of recent years opened offices in the United States, usually in New York, as the representatives of large foreign houses, handling considerable quantities of American goods. These branch establishments in America really take the place of the American export commission houses. They execute orders for American goods, which are sent to them by their foreign headquarters. They are usually successors to former commission house connections, which their principals have had, but whose business has grown to the point where it could be better conducted by personal representation.

Export houses in general handle their foreign connections as does the large export manufacturer. They do business with foreign customers, whom they know just as a manufacturer would, and as a rule extend no more liberal credit to their foreign connections than would manufacturers who have taken equal pains to investigate the standing of their customers. They enjoy an advantage, however, very often from the fact that the export house is also an import house and through the exchange of commodities, arranges finances much more conveniently than could a manufacturer. But as a rule most export houses ship goods to foreign customers, subject to draft attached to documents or against confirmed credits, just as does the prudent manufacturer. The advantage to the foreign customer is chiefly in the convenience of transmitting orders under one cover and receiving shipments on one bill of lading. It is true that export houses, through better acquaintance, are sometimes willing to allow longer term drafts than manufacturers, and because of their large business in foreign banking circles, sometimes finance such bills more readily than could an unknown manufacturer.

The advantage to be derived by the American manufacturer from doing business through export commission houses is considerable. He is relieved from the annoyance of petty details connected with shipping the goods, and has only to follow the instructions given him by the export house. He has all the usual facilities for investigating the responsibility and character of the export house in question and collecting from it precisely as he would from a customer in the United States. Furthermore, he is assured that his goods will reach his customer more economically, so far as ocean freights are concerned, than were he to ship himself, as the export house is able to command better rates than could an individual manufacturer, and in any event, through combined shipments from several manufacturers, the export house avoids excessive charges on each small shipment.

The subject of export business in general is a large one, and has only been touched on in this article. Acknowledgement is made to Mr. B. Olney Hough, editor of the "American Exporter,"

to whom the writer is indebted for valuable data, as well as to Hon. Wm. C. Redfield, secretary of the Department of Commerce, and to others.

Rubber manufacturers usually find their goods handled by export houses in much the same fashion as others, but in doing business with them they must take the pains to investigate their standing precisely as they would with any other customers. Having once satisfied themselves on this point, they can then go ahead with confidence and do their utmost to develop the new fields opened up to them.

"PAVEA" SYNTHETIC RUBBER.

Earle Bros., rubber brokers of 68 Broad street, New York, inform THE INDIA RUBBER WORLD that they are the authorized forwarding agents for F. R. Muller & Co., Limited, of England, for the sale of "Pavea" synthetic rubber.

They expect in June or July of this year to start the production of "Pavea" rubber at about 100 tons a week, but before the end of the year they hope to increase the output to about 1,000 tons a week. One interesting thing about this new synthetic rubber is that it is offered for sale at a discount of 10 per cent. from the market price of first latex crepe. To quote them exactly: "Any rubber not delivered by the time stipulated in any forward contract made will get the benefit of any fall in the market price of First Latex that may have taken place between the date of such contract and the date of actual delivery."

Earle Bros. submit an analysis of "Pavea" synthetic rubber, which is as follows:

	Per Cent.
Acetone extract resin.....	4.13
Rubber gum	95.70
Insoluble matter .....	.17
	100.

The remarkable part of this analysis is the percentage of resin in the rubber. It has always been supposed that rubber made by synthesis did not contain resin. Now would anybody after making synthetic rubber be likely to add resin? Manufacturers may not doubt the rubber at its lower price, but they are almost sure to doubt its origin.

HUNTING GUAYULE BY AUTOMOBILE.

FIRST and last many hundreds of Americans have visited the uplands of Mexico where flourishes the Guayule plant. Their mode of travel when they got away from the railroad was by stage or on horseback, as a rule.



A DITCH TO BE CROSSED.

So far as is known only one party was venturesome enough to attempt the desert journeys by automobile. This party was

made up of New York magnates of the private car and ocean-going yacht variety. It was piloted by a young American from whose scrap book the accompanying illustrations are borrowed. The journey of 125 miles took ten and a half days.



SIX MILES TO THE RESCUE.

The party camped by water holes at night and lived on frijoles, tortillas and game. They rode part of the way, walked much, and had an immense amount of fun. When stuck in a ravine they scoured the country on foot for mules to pull them out. When one cylinder of the automobile gave out they chugged along



LAST LAP OF THE AUTO JOURNEY.

with three. Finally when the machine gave out entirely they inspanned oxen and went right along. Of course this happened before the present Mexican muss, but it is just as interesting for all of that.

RECENT CUSTOMS RULINGS.

Duty at 47½ per cent. on the value was recently taken on cotton velvet with rubberized back imported by W. A. Walker, the Board of United States General Appraisers not sustaining his claim that it was properly dutiable as waterproof cloth.

A contention regarding corsets imported by Stern Bros. and composed of cotton and india rubber, with cotton forming the chief value, has been decided by classification of the article as cotton wearing apparel, dutiable at 50 per cent.

Duty at 10 per cent. has been levied on rubber junk of various kinds imported by several New York houses, the Board sustaining the Collector in this assessment against the protests of the importers, who claimed the merchandise fit only for remanufacture.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

Rubber Cement and Some of Its Uses.

ONE of the important and constantly increasing uses of rubber is in the form of cement, and many and varied are the arts, trades and occupations in which this form of adhesive has become practically indispensable.

Rubber cement may be divided into two classes, namely: a simple solution of the gum which by the evaporation of the solvent leaves a thin layer of the rubber between the parts to be stuck together; and a compound cement, which, after being applied and the pieces stuck together, is vulcanized, and to a certain extent becomes incorporated as a part of the article so formed. The first is used very largely in the manufacture of leather goods, such as boots and shoes, bags, pocket-books and similar articles. The compound cements are mainly used in the various rubber industries, such as waterproof clothing manufacture, the druggists' sundry business and in automobile tire work.

The manufacture of those cements used in the production of leather footwear is a comparatively simple matter. The cement is a solution of gum in naphtha, and while there is no secret in its composition, every manufacturer has his own formula as to the proportion of gum to the solvent, and also the kind and quality of the various rubbers which enter into his various grades.

Naphtha is used as the solvent in preference to gasoline or benzine, because of the higher volatility of the former, and the oiliness of the latter. Gasoline would evaporate too quickly for most purposes where the cement is used, while benzine is

too heavy and holds sufficient grease to detract from the adhesiveness of the rubber.

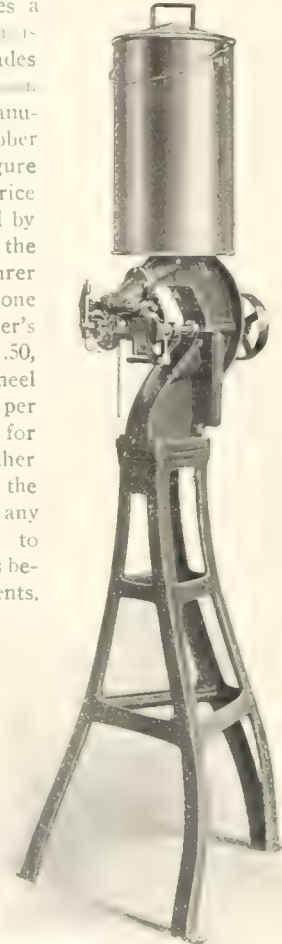
The finest qualities of rubber cement are made from Knapsack Pará, while in some grades a large proportion of Massara is used, and in the cheaper grades lower cost gums, even down to Pontianak. A cement manufacturer can furnish rubber cement at almost any figure a customer desires, the price being practically determined by the quality and quantity of the gum used. One manufacturer quotes for his best cement one dollar a gallon, but another's best sells in quantity at \$1.50, while a leading rubber heel manufacturer quotes \$2.50 per gallon for his best cement for attaching rubber heels to leather shoes. From these prices the scale runs down to almost any amount a customer cares to pay, some such preparations being quoted as low as thirty cents.

The manufacture of such cement is very simple. The crude rubber is cut in small pieces, softened by hot water, and run through the washing rolls in the usual manner, then sheeted and hung in lofts until thoroughly dry. It is then ready for dissolving in naphtha. The proper

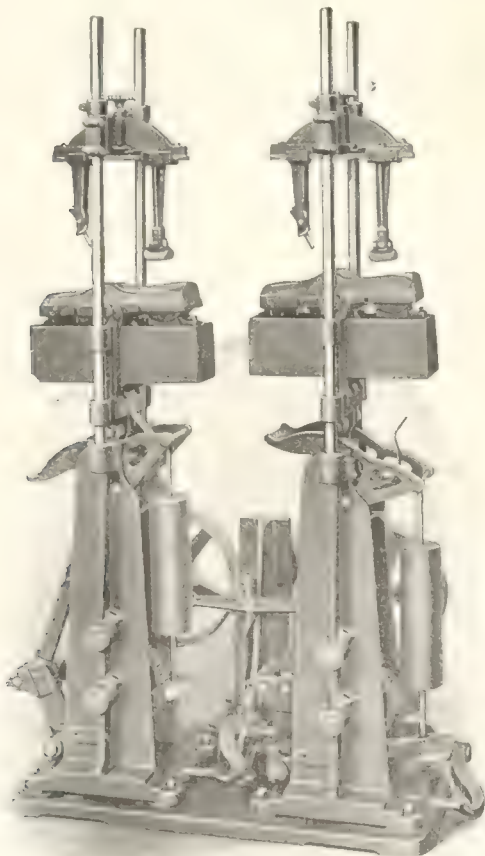
quantities of rubber and naphtha are placed in a "muddler," an iron tank having a capacity of about ten barrels. This tank has a central revolving shaft, furnished with projecting arms, while similar arms fastened to the inner surface of the tank enmesh those on the shaft and by constant stirring facilitate the solution of the gum; and a steam jacket over the lower half of the tank serves to further hasten the process. When the gum has entirely dissolved the cement is ready for drawing off into cans or other air-tight containers, for delivery to customers.

Simple as this process is, it requires care and experience, while the admixture of the various qualities of gum requires a knowledge of their individual properties and also of their prices current, where cement must be manufactured at certain prescribed prices. For many purposes such cement is entirely satisfactory, but in some of the arts it is required that it be practically colorless in order that it may not stain in any way the materials on which it is used during its application. In this case some manufacturers prepare a quality of their cement from the pure Ceylon or East Indian Pale Crêpe which makes a handsome article, not exactly clear but beautifully opalescent, and which leaves no stain upon white canvas or delicate shades of leather.

Then, there is a condition that requires a cement which



STAR CHANNEL CEMENTING MACHINE.



GOODYEAR TWIN SOLE-LAYING MACHINE.

will stick together leather containing oil or grease. Everybody in the rubber trade understands the action of grease on rubber. For this purpose, therefore, the manufacturers make a special cement which holds in suspension some absorbent material like French chalk or whiting. This, while being used, must be constantly stirred, for it is otherwise likely to settle. The chalk absorbs the oil and thus allows the rubber to retain its tackiness.

A very large amount of rubber cement is used in the manufacture of shoes; in fact, outside of its use in the manufacture of rubber goods, there is no industry in which it has such an extensive and general use. In bottoming the shoe it is used to fasten the outer sole until it can be stitched. Formerly many tacks were used to hold the outer sole in place, but today this is almost entirely superseded by the cement process. The insole and welt, and the outsole, are coated with cement by a machine which takes it from an air-tight tank and applies it by means of a revolving brush in the exact quantities desired. In this way an even coating is given to the different parts. Formerly, when this was done by hand, the waste through evapora-

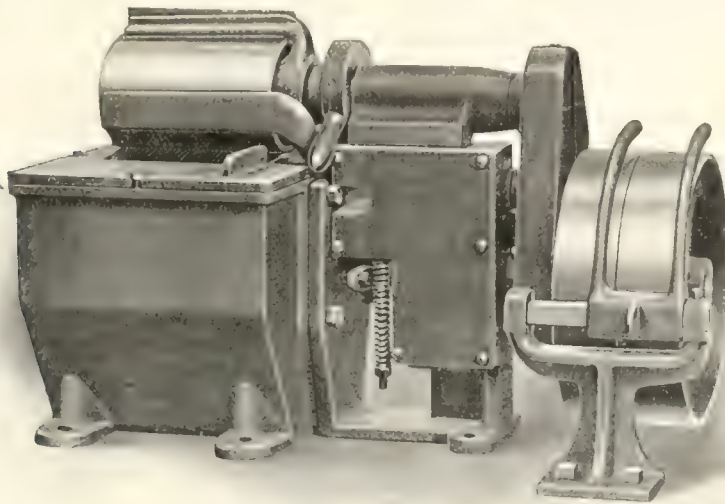
sticky, the channel lip, which has previously been laid back against the sole, is again forced into its former position and held securely in place by the rubber cement. This machine, by means of brushes of different widths, may be used in other parts of the shoe where cement is required. The narrow brush for the channel may be replaced by one broad enough to coat the outsole, and the same machine may be used to fold the skived edges of upper leather to be stitched or simply held together by the strength of the cement.

But for cementing soles, the Rapid Rotary cementing machine is preferable. It is a covered cement pot in which revolves a large corrugated roll by which the cement is applied. The feed roll automatically adjusts itself to any thickness of sole. Soles of any size may be given an even coating of cement of any desired thickness, while the other side is perfectly free from cement. Its capacity is 5,000 to 10,000 pieces per day, according to the skill of the operator.

This machine was formerly in demand to coat cloth, and to reinforce thin leather used in the uppers of women's shoes, but it was found that rubber cement was considered objectionable, as rubber was heating and had a tendency to "draw" the foot. Paste or other adhesives are now used for this purpose.

Mention should be made here of the fact that thousands of gallons of rubber cement have been used in the past to mix with ground cork as a "filler" in the space between the inner and outer sole of welt shoes. But when rubber soared in price a few years ago other materials were experimented upon, and as a consequence cheaper vehicles are used to hold in a paste form the cork used for this purpose.

The high price of leather and the unsatisfactory wear of inferior stock have led to the use of substitutes for this material in certain portions of shoes where costs are whittled down closely. One of these is a rubber treated canvas insole, in the manufacture of which the Gem Cementer is employed. This machine puts the cement on the canvas as it is fed through the cement pot. Strips of duck or canvas can be

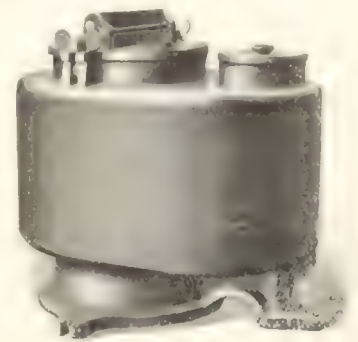


RAPID ROTARY CEMENTING MACHINE.

tion or lack of care on the part of the workman was very great. The leather is then softened, so as to make it sufficiently pliable to take the shape of the last when placed in the sole-laying machines. These machines are made in pairs, so that the workman can place sole and upper in one and let it remain until "set" while he does the same with the other. The twin machine is shown here—the writer of this article being indebted for this and for the other four illustrations to the United Shoe Machinery Co. The lasted shoe is held by the small peg at the left of the upper section and by the pad at the right. The sole with its cement very "tacky" is laid on the form shown, and the lasted shoe is pressed down, when the sole conforms to the shape of the rubber pad or mold beneath and the last above, and is firmly attached and ready for stitching. Glue would stick the sole on as well, but it would dry hard and make a stiff shoe, while rubber is pliable, possesses anti-squeak qualities, and is waterproof. The shoe is now ready to be stitched by machine.

Another use for rubber cement is in the channel, that little lip of leather split from the outsole, so that the stitching may be done and then covered so the sole will be smooth. The inside of this channel is coated with cement, and time, care and accuracy are secured by using the Star Channel Cementing Machine, which coats the lip with just the proper quantity and covers it exactly as needed.

After this cement has been allowed to set till it becomes



GEM CEMENTER.



IMPROVED CEMENT POT.

cut and passed through this machine, which spreads a perfectly even coat of cement on one side. These strips are then pressed together, and later cut to the shape required.

Where cementing is done by hand the volatility and inflammability of rubber cement has necessitated inventions to prevent as far as possible the thickening of the cement in the container. An improved cement pot shown has a container shaped somewhat on a spiral, and which revolves partway in a frame. When in use, the square opening presents only small surface for evaporation, and when not in use the pot is turned up till it strikes the square plate above, when a clamp seals it air-tight.

Pure india rubber, whatever its quality, will deteriorate after a while, and as the cements mentioned leave simply a layer of such rubber between the surfaces they are intended to join, such joints are likely, in time, to loosen and separate. Therefore, in the manufacture of rubber goods, which are afterwards vulcanized, other ingredients are added to allow the thin layer of cement also to be vulcanized, and thus form an actual joint of the same material and similar consistency as that from which the article is made.

Such cements are used in making soft rubber goods like hot water bottles and fountain syringe bags, and hundreds of articles of like nature; also in the rubber clothing business, where the best work is required. To be sure, coated cloth is purchased cut into shape and stuck with simple cement, but it does not wear long before the cement loses its hold and the garment is worthless. The more reliable manufacturers use a compound cement, which is vulcanized when the garment is completed.

As examples of such compound cements the following may be considered as representative:

Fine Pará	89.8 parts
White Lead	3.4 "
Litharge	6.8 "
Sulphur	4.2 "

One pound of this compound is used to a gallon of naphtha.

For rubber-surfaced coats, and for automobile tire work, the following compound has been found effective and satisfactory:

Fine Pará	24. parts
Whiting	12. "
Litharge	16. "
Sulphur	1.25 "

One pound to each gallon of naphtha.

A richer cement for the same purpose is:

Fine Pará	33 parts
Litharge	6 "
Sulphur	3 "

For sole laying and channel cement a good mixture is said to be:

Fine Pará	25 parts
Congo	90 "
Lopori	90 "
Gum Thus	15 "

From ½-pound to 1 pound to the gallon of naphtha.

The Gum Thus, or common resin, is added to prevent too rapid drying, but any resinous gum is likely to "cake" on exposed parts and is hard to remove, while purer gum can be rubbed off with the fingers, when it rolls up into small rolls and peels away, where resinous cements stick tightly.

In the leather goods trade, the hat business, pocketbook making and in many lines where a strong flexible adhesive is needed, nothing fills the bill quite so satisfactorily as well made rubber cement.

A novelty for the bathing beaches has been introduced for the coming season in the form of dolls with red rubber costumes and cork stuffing.

WHEN MAN IS MADE OF RUBBER.

The alleged discovery by a Parisian surgeon that rubber can be grafted onto human beings, new organs and members made of that substance taking the place of their natural counterparts, is referred to in the editorial columns of this issue with all the seriousness that the subject seems to de-

A Doctor Is Grafting Rubber Into Human Beings.



mand. This discovery appears to have made a strong appeal to the artist of the "Chicago Daily Tribune," who sets forth in a series of illustrations—reproduced in somewhat condensed form below—the many marked advantages that will accrue to human beings when the rubber grafting process becomes general.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on May 20 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., Common	215	—
Ajax-Grieb Rubber Co., Preferred.....	99	—
Firestone Tire & Rubber Co., Common.....	302	307
Firestone Tire & Rubber Co., Preferred.....	108	110
B. F. Goodrich Co., Common.....	25½	26¼
B. F. Goodrich Co., Preferred.....	89½	90½
Goodyear Tire & Rubber Co., Common.....	177	182
Goodyear Tire & Rubber Co., Preferred.....	98	100
Kelly-Springfield Tire Co., Common.....	51	53
Kelly-Springfield Tire Co., Preferred.....	132	137
Miller Rubber Co.....	130	135
Portage Rubber Co., Common.....	—	40
Portage Rubber Co., Preferred.....	—	90
Rubber Goods Mfg. Co., Preferred.....	100	110
Swinehart Tire Co.....	65	70
U. S. Rubber Co., Common.....	59	59¼
U. S. Rubber Co., 1st Preferred.....	102¾	103

What a Trade-Mark Right Is and How to Obtain It.

THERE is an almost general misapprehension as to the real meaning of a trade-mark right. It is generally believed that the obtaining of a trade-mark creates the right to the exclusive use of the word, phrase, or symbol, as the case may be. That is not at all the case. The registration of a trade-mark creates no right whatever. The right to the exclusive use of the mark, if it was a right, existed before the registration and entirely distinct from it. It came entirely from the fact that the owner was the first to use it. The registration of the trade-mark simply made it easier to pursue the remedy against infringers. The owner of the mark would have had precisely the same right to its exclusive use if he had not registered it. The registration simply makes it easier to prevent other persons from infringing upon it.

Let us suppose that John Jones, a rubber manufacturer, wishes to market a line of goods under a new name. He thinks "Jupiter" a good name, and adopts that. If no one else has adopted "Jupiter" as a brand name for rubber goods before him, Mr. Jones, by the simple adoption of the name, acquires a right to it which he may defend against all other persons. In order to acquire and to enforce that right, he has no need whatever to register the mark in Washington. What he gets by registration is certain advantages in pursuing his remedy against infringers which the trade-mark laws give him, and which are explained a little further on.

The above principles are repeated and reiterated because, as already observed, there is general ignorance on the subject.

Trade-marks are registered in the Patent Office at Washington, and all communications on the subject need to be addressed to the Commissioner of Patents. The trade-mark law under which the Patent Office now operates is the act of February 20, 1905, as amended by the act of May 4, 1906. This act provides, generally speaking, that any name, phrase, mark or symbol may be adopted as a trade-mark and registered, with the following exceptions: (1) It must not consist of immoral or scandalous matter; (2) it must not consist of the flag or coat of arms of the United States or any State or foreign nation; (3) it must not consist simply of the name of an individual firm, corporation or association unless same be woven or printed in some distinctive manner; (4) it must not consist of words or devices which describe the goods, or their quality; (5) it must not be a geographical term; (6) it must not be a portrait except with the subject's attested consent.

Practically every other mark of whatever character may be adopted and registered.

The certificate of trade-mark, if granted, can be assigned to another person, but only when the good will of the business represented by the article covered by the mark is assigned also. It remains in force for twenty years only, but can be renewed. All trade-mark articles must bear the words, "Registered in U. S. Patent Office," which may be abbreviated thus: "Reg. U. S. Pat. Off."

We come now to the advantages in the way of suing an infringer which the person who registers his trade-mark obtains under the law. A summary of these advantages is as follows:

1. The holding of a certificate of trade-mark registration is considered *prima facie* evidence of ownership. That is, if not contradicted by evidence to the contrary, it will be accepted by the courts as evidence that the person holding it was the first person to adopt the mark, and therefore is in position to defend it against all other persons.

2. The act gives a right to bring an action in damages against any infringer, tho the owner would have had this right anyway under the common law. The act gives the advantage, however, of authorizing the court, where the suit is decided against the alleged infringer, to enter judgment for three times the

amount of the verdict. This could not have been done in any common law action.

3. The owner of a trade-mark can sue in any circuit or territorial court of the United States, or in the Supreme Court of the District of Columbia, and the case can be appealed to any circuit court of appeal, without regard to the amount in controversy. This opens the United States courts to him, with the advantage of being able to get service upon the defendant without difficulty.

4. The above courts can grant injunctions against an alleged infringer of a trade-mark, and a verdict will lie against him at the trial of the case for all profits he has made out of the illegal use of the trade-mark, also for all damages the plaintiff has sustained. These damages can be increased to three times the actual amount, by way of penalty against the infringer. At the trial of the case the plaintiff is required to prove only the sales of the defendant under the illegal trade-mark.

5. The court may also order the destruction of all labels, signs, prints, packages, wrappers or receptacles which bear an infringing trade-mark.

6. An injunction granted under the act may be served upon and enforced against any infringer wherever he may be found.

In applying for the registration of a trade-mark, three forms are used: One known as the petition, the second as the statement, the third as the declaration. Following is a proper set of forms where the applicant is an individual. Where a partnership or a corporation applies, the forms must be altered to suit:

(1) PETITION

To the Commissioner of Patents:

The undersigned presents herewith a drawing and five specimens of his trade-mark, and requests that the same, together with the accompanying statement and declaration, may be registered in the United States Patent Office in accordance with the law in such cases made and provided.

JOHN JONES.

Dated June 1, 1914.

(2) STATEMENT.

To all whom it may concern:—

Be it known that I, John Jones, a citizen of the United States of America, residing at Philadelphia, county of Philadelphia, State of Pennsylvania, and doing business at No. 1300 Chestnut street, in said city, have adopted for my use the trade-mark shown in the accompanying drawing, the triangle being printed in red, for rubber heels, in class —.

The trade-mark has been continuously used in my business since January 1, 1912.

The trade-mark is applied or affixed to the goods, or to the packages containing the same, by placing thereon a printed label on which the trade-mark is shown.

JOHN JONES.

(3) DECLARATION.

State of Pennsylvania, }
County of Philadelphia, } ss.

John Jones, being duly sworn, deposes and says that he is the applicant named in the foregoing statement; that he believes the foregoing statement is true; that he believes himself to be the owner of the trade-mark sought to be registered; that no other person, firm, corporation or association, to the best of his knowledge and belief, has the right to use said trade-mark, either in the identical form or in any such near resemblance thereto as might be calculated to deceive; that said trade-mark is used by him in commerce among the several States of the United States; that the drawing presented truly represents the trade-mark sought to be registered; and

that the specimens show the trade-mark as actually used upon the goods.

JOHN JONES.

Subscribed and sworn to before me, a notary public, this 1st day of June, 1914.

RICHARD DOE.

Notary Public.

L. S.

If color is not an important part of the mark, no description of it in the statement is necessary.

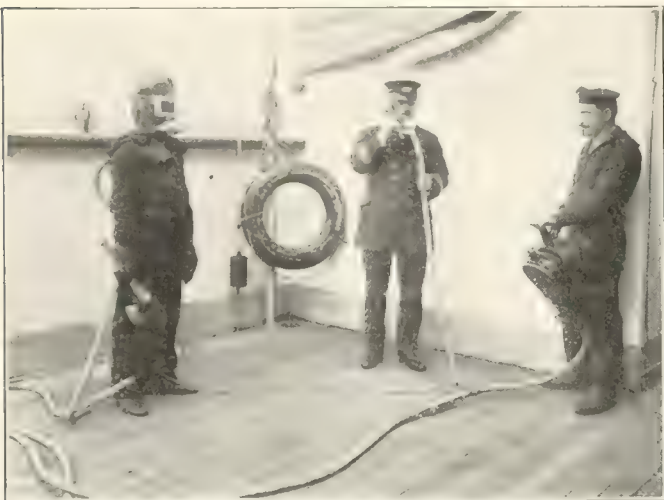
In explanation of the use of the designation "Class —" in the statement, it should be stated that the Patent Office divides all merchandise into classes, and the class to which the goods covered by the trade-mark belong must be stated.

The fee for obtaining a trade-mark is now \$10, which should be sent by money order or certified check to the order of the Commissioner of Patents.

(Copyright, by F. L. J. Buckley.)

FIGHTING FIRE ON THE GREAT LINERS.

THE vital importance of efficient means of fighting fire on shipboard has been brought to the attention of the public with great frequency of late, by reason of many terrible sea disasters. Here is an illustration of an apparatus which is being installed on some of the largest transatlantic liners. It consists of a helmet, with cape coming well down over the wearer's shoulders, to which is attached a rubber hose, on the other end of which there is a bellows, worked by an assistant outside. This bellows supplies the fire fighter in the smoke-filled room with pure air. In addition, there is a second pipe which serves as a speaking tube, so that there can be direct and instant communi-



SMOKE HELMET AND EQUIPMENT FOR FIGHTING FIRE ON STEAMERS.

cation. Then there is a third means of communication—not rubber, but eminently desirable in this sort of work—viz., a rope that is tied around the fighter's waist, by which if he becomes disabled he can be pulled back to safety.

The second picture shows the fire detector and extinguisher apparatus installed on the S. S. "Imperator." This equipment consists of a set of pipes, shown in the cabinet in the photograph, one of which is connected with each of the compartments of the hold. The cabinet contains an electric suction fan in the enclosed part at the top. This fan is always in motion, drawing a column of air through each of the pipes and exhausting it through the large pipe leading up to the ceiling. If a fire gets started in any part of the ship the fan

will soon draw the smoke up through the particular pipe leading to that compartment and as this outfit is located on the bridge of the ship, the officer in command has it constantly under his observation. As soon as smoke is seen arising from any pipe, the doors are opened and the air shut off and



FIRE DETECTOR AND EXTINGUISHER.

the heavy steam hose which the sailor is holding is screwed down in connection with that particular pipe. This hose is connected with the steam pipes from the engine room and it takes only a few moments to fill any section of the ship's hold with live steam under heavy pressure. The steam acts as an excellent fire extinguisher and does much less damage to the cargo than water.

RUBBER IN CELLULOID MANUFACTURE.

In making various celluloid articles, such as simple cane and umbrella handles that are only to be enlarged, a soft rubber core is used. It is placed inside the celluloid tube, which is steeped in boiling water and the hot water expands the rubber core, thereby enlarging the tube. The rubber core is then withdrawn and the tube placed in the mold. An enlarged celluloid tube open at both ends is thus formed.

Certain hollow objects are made by introducing a rubber core into a hollow block. By heating and pressure, the celluloid is molded on this core, which is afterwards withdrawn. Handles of sticks and umbrellas imitating thorn are made in this way.

In the manufacture of celluloid umbrella or cane handles, which are bent or twisted, a rubber core is used. The core is of soft rubber, spiral in form and introduced into a tube of celluloid, the whole placed in boiling water. The rubber core expands by the action of the hot water and the celluloid tube softens and assumes the shape of the rubber core. While in a plastic state, the celluloid is bent or twisted into the desired form. After a short time has elapsed, the celluloid is cooled sufficiently and the rubber core is withdrawn. The celluloid then becomes rigid and retains its shape. The rubber core being elastic expands lengthwise, while its diameter contracts under a stretching force and it is therefore easily withdrawn.

THE CLOSE CONNECTION BETWEEN COTTON AND RUBBER.

By Edwin H. Marble.

A VERY suggestive incident which occurred at the rubber exposition held in New York would furnish a text for a many-page article. Approaching one of the exhibits, a gentleman took a piece of cotton cloth in his hands and asked rather sarcastically, "That's common cotton cloth, isn't it?" Informed that his premise was correct, his next remark opened up a very exhaustive subject. "Now, what's a piece of cotton cloth got to do with the rubber trade?" It is my intention to answer this question in a somewhat more serious manner than the questioner expected. Broadly speaking, the piece of cloth is the means by which the rubber, in many of its manufactured forms, is put into usable condition. In the raincoat it carries the rubber surfacing to the wearer's back; in the overshoe it puts wearing qualities into that article, and in the tire, it is the bond which unites the rubber surfaces and adds durability and life to the combination.

When the importance of this medium is considered we can see how essential it is that this fabric should be properly selected for the particular use to which it is to be applied, properly prepared for the application of the rubber, and properly combined and united with the other element that enters into the manufactured form.

First its selection. The use to which it is to be applied and the processes thru which it passes during that application are both to be considered. While the fabric is manufactured it must receive certain well defined courses of selection and treatment. The fibre which enters into its composition—Upland, Midland, Sea Island, Egyptian—each has well known characteristics that best fit each staple to a particular class of goods, and once selected this fibre must be handled by the cotton manufacturer to produce a yarn of suitable size and strength to meet the requirements. This yarn must then be organized into a fabric, according to a well defined plan. Now when we use the term "well defined plan" we mean a plan which will produce a fabric suitable for the requirements of the rubber manufacturer; and these requirements are of a widely varied nature. The shoe drill, the wrapper or liner cloth, the cotton backing for hospital sheeting and the fabric for the automobile tire, each requires a planned organization.

Taking the last item as an example we find a strength test necessary to satisfy our requirements. An openness of structure to allow the rubber to properly rivet or friction the pieces of fabric together is a second requirement, and an inter-laying of the warp and filling strands that shall give a uniform elongation along longitudinal and transverse lines of pull, is a third requirement. Any of the other fabrics may be examined in a similar manner. A most important point to consider at this time is when the rubber man shall decide whether the fabric fulfils the requirements. It sometimes happens that a fabric has been tested at the wrong time. A fabric when received from the seller may show a strength test above requirements, and yet when subjected to the processes incidental to manufacture, it may have lost part of its strength and be condemned as unfitted for its purpose. The specifications should state when and how this strength test should be applied, and the manufacturer of the fabric be asked to cooperate with the rubber man in obtaining the proper strength under the proper test.

And don't expect too much of the fabric. A certain sized yarn organized into a certain fabric under certain fixed conditions of moisture will satisfy a certain test, and the variations in different testing will be slight.

Now as to the equal elongation of warp and filling. If the piece as received is correct in this particular, how about the rubber man's subjecting the narrow strip of this fabric to an abnormal pull in a particular direction—extending the threads along one line to their fullest straining point, while little strain is applied in an opposite direction? Is this a fair method of treat-

ment? Is it not unfair alike to the cotton manufacturer, the tire manufacturer and the innocent victim—the automobile owner who pays many of the unfair bills? A closer acquaintance between the two first mentioned will produce a much pleasanter acquaintance between the two latter.

The other requirement noted is the particular openness of structure required to allow the rubber to properly friction the pieces together. This is largely a matter of individual decision and must be to a great extent a matter of experimental tests at the rubber factory. In this, as in the other considered points, a mutual co-operation between the parties interested will aid in determining just what is best to do in each particular case.

We have dealt quite fully with the tire fabric, as it seemingly is the most important of all the cotton fabrics made, and at the same time there seems to be less understanding of its particular requirements and of the causes of its failures than should be the case. The steel manufacturer is taken into the confidence of the user, who requires a product just suited to his needs, and their combined efforts have given this country a commanding position in that industry. Similar results can be accomplished in the tire industry. In fact we have already made fast strides in this branch of our manufactures from the rather crude product of only a few years ago.

The proper preparation of the fabric—what does this mean? Simply this: the two elements that seem to be most detrimental to the rubber coating of fabrics are dirt and moisture. The first can be largely eliminated by mechanical means, clearing the fabric of the loose or partially loosened foreign matter. In some particular cases even the projecting fibers should be sheared off or otherwise removed; while it is necessary in some classes of coated goods to force through or rivet into the cloth the projections or spurs of rubber to obtain a proper adhesion of the two materials. In others a close enough adhesion is obtained by cementing the rubber to the face of the fabric; or again a thin application of rubber unites the two layers of a piece of double texture goods.

In the one case the fabric must be thoroughly cleared of any substance that prevents a proper adhesion, and in the other case the openings or meshes must be thoroughly cleared to allow the rubber to penetrate into these openings. Those processes are almost entirely mechanical and suitable machines can be secured.

The third consideration, the proper combining of the fabric and the rubber, is a rubber proposition and outside the limit of this article. Enough has been said, we believe, to satisfy any of those interested that the piece of cotton cloth has considerable to do with the best showing that rubber in many forms can make.

NIAGARA FALLS TO HAVE A RUBBER INDUSTRY.

The Santo Rubber Co., incorporated December 24, 1913, under the laws of Delaware, purchased early in February of this year five acres of ground at Niagara Falls, New York, for a factory site. It is the intention of the company to have its plant built, machinery installed and to be ready for business by January, 1915; and architects have been preparing plans and specifications to be submitted to contractors for bids on the construction work. E. T. Brockman is president of the company and its executive offices are located in the Oliver building, Pittsburgh.

SLOW OPERATION OF RAW COTTON MACHINERY.

It has been pointed out on competent authority that the ginning of cotton is not now so well done as it was by the original machine of Eli Whitney 110 years ago, owing to the forced rapidity of the saws which cut the fibers. Baling cotton remains as it was at the close of the war of 1812, with the exception of the compress and the use of iron bands in place of ropes. Notwithstanding the many desirable improvements in both the ginning and compressing of cotton, the relatively slow operation of the gins and the enterprise required for installing and managing the slow hydraulic compresses at the plantation have retarded their commercial introduction.

Cultivation of Rubber on the Malayan Peninsula.

THE development of the rubber industry is without a parallel in the history of tropical agriculture, its only precedent, that of quinine, having been carried out on a much smaller scale.

Up to the year 1898 all the rubber handled in commerce was extracted from the trees or vines of tropical forests, principally in South America and Africa, being collected by the natives for shipment to Europe.

Altho at first the idea of cultivating rubber was generally ridiculed, the industry has achieved a marked success within a dozen years, having attracted capital to the extent of more than \$250,000,000. During that time immense areas of forest have been converted into flourishing plantations, affording employment to a large number of Europeans, Javanese, Tamils and Chinese, in clearing and planting the soil and preparing the rubber. This great development has not only led to notable progress in the science of tropical agriculture, but has brought into prominence a part of the British Empire heretofore but little known—the English possessions bordering on the Strait of Malacca.

Mr. H. N. Ridley, who was Director of Gardens and Forests in the Straits Settlements from 1888 to 1911, has recently contributed a comprehensive review of the rubber plantation industry to the columns of "La Hacienda." Quite a little of the ground covered by Mr. Ridley is familiar to the readers of this publication, but even so it seems worth while to give a brief digest of this interesting contribution. He refers to the fact that the first Spanish invaders of South America early became acquainted with the uses to which the natives were putting the gum from the rubber tree, and he also refers to the well known fact that the first general mention made of rubber in England referred to its possible use for erasing pencil marks, a matter brought to public attention by Priestley.

At that time stationers retailed it for 7s. 6d. (\$1.82) per cubic inch. Its first use in connection with clothing dates from 1820, when Thomas Hancock took out his first patent for that purpose, to be followed by Macintosh and Goodyear. Since then improvements have rapidly been made in the utilization of rubber, which now ranks among the most important and valuable of the world's vegetable products.

Concurrently with this demand, the sources of supply were thoroughly investigated, and over 100 plants were discovered which produced more or less valuable grades of rubber, including

SOUTH AMERICA *Hevea*, *Castilloa*, *Ceara* (*Manihot*) and *Mangabeira* (*Glancornia*)

AFRICA *Landolphia* and *Funtumia*.

ASIA *Ficus elastica*, *Willoughbeia*, *Urceola* and vines of less value.

PROSPECT OF DEARER RUBBER.

For many years the natives penetrated the forests and collected the rubber wherever it was to be found, in most cases destroying the trees or vines. This method, by increasing the expense of collection, rendered the business unprofitable, so that there was a prospect of the price of rubber advancing to a point which would preclude its use for ordinary purposes. Hence, Sir Joseph Hooker, Director of the Kew Botanic Gardens, induced the British government in 1873 to send an expedition under Mr. James Collins to Amazonia after seeds. From the few hundred seeds thus obtained, a dozen plants were raised, which were sent to Calcutta, but all died, being unable to withstand the climate. In 1876 Mr. H. A. Wickham was sent to Amazonia to make another attempt, and succeeded in procuring 70,000 seeds, which were transmitted from Kew to India and Ceylon, and from which some 2,800 plants were obtained.

It was then decided to utilize the Ceylon Botanic Gardens at Peradeniya as a nursery for the plants, from which they could be transferred to the various British colonies which afforded prospects of successful cultivation. At that time a case of plants was sent to the Singapore gardens, then recently estab-

lished, but it having been accidentally destroyed, a second lot of 22 trees was sent, and was planted in 1877 with good results, part of them being sent to Perak, Malay Peninsula, where they were planted. It is thought that one of these trees is the largest on record in girth. From these few trees has developed the plantation rubber industry in all countries. The Singapore trees reached maturity in 1881, when seeds were sent to Borneo and elsewhere, and more than a thousand trees were planted in forest form in



TREES SHOWING SPIRAL SYSTEM OF TAPPING. MALAYAN PENINSULA

the Singapore gardens. Progress was also being made in Ceylon, at the Peradeniya gardens, but on a lesser scale.

In 1888 Mr. Ridley was appointed director of the Singapore Botanical Gardens, and commenced the experimental tapping of the Pará rubber trees, samples being displayed in local exhibitions, and distributed among those interested. Specimens sent to London in 1891 were considered of good quality, and in 1899 some sheet rubber from the Perak trees sold in London at 3s. 10d. (93.25 cents) per pound. This was the first cultivated

Pará rubber sold in the markets of Europe. Nevertheless, it was difficult to interest land owners in the future of rubber cultivation. The discovery of extensive areas in Africa producing *Landolphia* and *Euntomia* kept down the price of rubber, but it was evident that the destruction of *Landolphia* in Africa, and the signs of reduction in the Amazonian yield indicated the prospective insufficiency of wild rubber to meet the requirements of the market, which the increased use of rubber tires was developing. Still, the land owners of the Malay peninsula devoted themselves to planting coffee, it being apparently impossible to interest them on more than an experimental scale in the future of the rubber industry.

DEVELOPMENT OF RUBBER

Finally, the fall in the value of coffee and the advance in the price of rubber (due to the growth of the automobile industry in 1898), attracted the attention of landowners, and in a few years an activity of an unprecedented character was displayed in the cultivation of rubber. In Ceylon a certain number of magnificent trees at Heneratgoda furnished seeds both for the requirements of the island and for export to other colonies, particularly to the Federated Malay States, tho the old trees in Perak furnished a supply of seeds for that state. The first important areas opened to the new cultivation were in Selangor, near Port Swettenham. On both sides of the railway between that port and Kuala Lumpur (the capital) coffee rapidly disappeared, and was replaced by Pará rubber. The forests vanished, and many districts of the peninsula, which had previously been scarcely visited by the white man, became the home of flourishing rubber plantations. Roads and railways increased, new populations were formed, labor was imported from nations of workers, Europeans were urged to act as directors and assistants, and both commerce and wealth increased.

OTHER TROPICAL COUNTRIES.

This activity rapidly extended to other parts of the tropics, seeds and plants being distributed among the various botanical gardens, especially those in the British colonies. More than 10,000,000 seeds and plants have been distributed from the Singapore gardens alone, and likewise a large number from Ceylon. Among the points to which seeds have been sent from the English possessions in Malaya and Ceylon are:

Africa.—Liberia, Nigeria, Uganda and Seychelles Islands.

Asia.—Burma, Assam, Southern India, Sumatra, Borneo, Java, Christmas Island, New Guinea, China, Cochin China, Japan, and Siam.

Australia.—Fiji, Samoa.

America.—Guiana, Honduras, West Indies.

In some cases the attempt has been a failure, but in the greater number important rubber plantations have been developed, this enormous industry having arisen from 22 plants sent to Singapore in 1877, and from 2,000 sent to Ceylon, of which only 70 were alive in 1899. No record exists of any subsequent importation of plants from Amazonia. Neither has cul-

tivation reached its limit, there being still immense areas at both sides of the railway which traverses the Malay peninsula, destined to be covered with this valuable tree. Nor should Pará rubber alone claim the attention of investors, which should also be directed to the other kinds to which reference has been made. It is true, however, that none of them has attained the same commercial importance as Pará rubber, in rapidity of development, value of product, and the facility with which it is prepared. Practically none of them has developed well in the East Indies, altho Ceara has been grown with more or less success in the



Courtesy of La Hacienda, Buñalo.

A WELL KEPT RUBBER PLANTATION, MALAYAN PENINSULA.

mountainous regions of Java and in Southern India.

Ficus elastica was long cultivated in Sumatra, but on account of the irregularity of its production has proved to be unsatisfactory. On the first tapping it gives a considerable quantity of latex, and less the second time, gradually diminishing the yield until it ceases. It then needs a rest of several years before producing more rubber. This peculiarity, Mr. Ridley remarks, has led to the disappearance of its cultivation in the East. To use his own words:

"Practically the great future of rubber is in the cultivation of *Hevea Brasiliensis*, which produces not only more and better rubber, but is easier to cultivate, and sooner attains the right dimensions for tapping. No doubt, for some time at least, part of the rubber of commerce will be derived from wild sources. . . . But none of these other rubbers has the value of Pará, nor can they take its place."

With regard to wild Amazonian rubber, the opinion is expressed that the expense of its production and transport will necessarily limit its yield. On the other hand, good plantations of Pará can produce it at a price leaving a fair profit, altho the latter may be less than what is paid the collectors in Amazonia for collection and carriage to the nearest port. Plantation rubber has the advantage of being cleaner than wild rubber, and of being more readily brought into the shape required by the manufacturer by the help of machinery, which cannot be used in the forest.

ADVANTAGES OF THE MALAYAN PENINSULA

After comparing the success of plantation rubber in other parts of the world, Mr. Ridley remarks that the best results have been obtained in the Malayan peninsula, where there is an extensive area of alluvial plain with a steady rainfall through

the year, and a high, tho not an excessive high, temperature. The development of rubber trees is rapid, while the latex is abundant and rich in rubber.

Pará rubber also grows well in Ceylon, but its progress is not so rapid, and the area available for cultivation is not as extensive as in the Malay peninsula. Java, Sumatra and Borneo have plantations which are rapidly extending, but at a somewhat slower rate, at least in Java. Plantations on these islands being relatively new, comparatively little rubber from those sources has come into the market. In the south of Indo-China the French have some plantations of Pará rubber, but the opinion is expressed that it is as yet too early to estimate the prospective importance of the supply from this quarter.

In the concluding chapters of his article Mr. Ridley deals with practical questions of cultivation and preparation from the light of his personal experience.

CEYLON CHAMBER OF COMMERCE.

ONE of the principal matters recorded in the report of the Ceylon Chamber of Commerce for the second half of the year 1913 is the approval by government of the island being represented at the approaching London Rubber Exhibition. This approval was accompanied by an offer to contribute a sum equal to that collected from other sources, up to \$8,333. The adequate representation of the colony is being actively promoted by a joint committee of the Chamber of Commerce and the Ceylon Planters' Association, with a view to impressing upon consumers the merits of plantation rubber.

According to the statistics of the Chamber of Commerce the total rubber export for 1913 was distributed as follows: United Kingdom, 15,841,126 pounds; America, 6,417,236 pounds; Belgium, 4,214,736 pounds; Australia, 462,473 pounds; Germany, 417,946 pounds; Japan, 312,868 pounds; all other countries, 366,960 pounds; total, 28,033,345 pounds. Ceylon produce represented 25,433,551 pounds, the balance having been imported from the Straits and India for reshipment. As compared with 1912 this result shows an increased export of Ceylon produce amounting to 10,452,476 pounds for 1913.

That Ceylon intends to encourage the transit trade in rubber is shown by an official statement to the effect that the export duty of 75 cents per 100 pounds would be levied only upon Ceylon grown rubber, and not upon that imported. This export duty was to go into effect on January 1, 1914.

The amount of rubber offered at the local auctions has steadily increased during the last three years, the quantities having been—

1911, 2,432,859 pounds;	average per pound, Rs. 2.86 (95 cents)
1912, 6,260,026	" " 2.75 (92 ")
1913, 12,013,824	" " 1.92 (64 ")

At the opening of 1913 first quality crepe sold at Rs. 3.20 (\$1.07) per pound, selling in September at Rs. 1.42½ (47 cents), and recovering by the end of the year to Rs. 1.52½ (51 cents). Diamond smoked sheets have commanded a premium equaling 2 to 5 cents over the price of first quality crepe.

At the general meeting of August last William Moir, the chairman, commented on the Ceylon rubber exports doubling themselves each year, the majority of rubber estates being able to compete successfully in cost of production with any other rubber producing country in the world. In these conditions he considered lies the soundness and strength of Ceylon's position as to the article.

He referred also to possible improvements in the method of distributing rubber at Colombo, and to the measures in force for the prevention of rubber thefts, by the co-operation of local dealers with the authorities.

In the appendix a quantity of correspondence is quoted on various subjects as to which the chamber has been actively in-

NEW USES FOR PLANTATION RUBBER.

Among the newest rubber floorings in London is that laid at the offices of the Rubber Growers' Association, 38 Eastcheap, which is identical with that being put down at Guy's Hospital, the Children's Hospital (both in London), and the Edinburgh Royal Infirmary. In addition to being noiseless, rubber flooring has undoubted hygienic advantages and great durability.

The Rubber Growers' Association intends to present a rubber flooring to one or more London churches, and also hot water bottles to certain hospitals. Organized trials are likewise under consideration of rubber-faced wood blocks for street paving and rubber covering for concrete or cement lawn tennis courts for indoor play. It is thought that in this way large quantities of rubber might ultimately be used.

A London correspondent of the "Ceylon Observer" calls attention to the satisfaction given by the rubber flooring at Lloyds' Underwriting Rooms and other offices in the English metropolis, adding: "I think something might now be done in the way of making rubber floor-cloth, similar to linoleum or the old-fashioned wax cloth of our youth, which could be laid down and lifted up easily, without damaging it. This would be a great and quiet boon in vestibules or long corridors, and would last much longer than linoleum—always supposing that it was made of good rubber and not of second-hand or adulterated stuff."

The floor of the underwriting rooms at Lloyds' in London is now being covered with a composition of rubber guaranteed to last 20 years. It has the appearance of large paving-stones, but the incessant tramping of feet over it produces scarcely a sound.

MR. ARTHUR LAMPARD'S VIEWS ON RUBBER.

Presiding at the recent annual meeting of the London Asiatic Rubber and Produce Co., Mr. Arthur Lampard reported a crop for 1913 of 1,006,736 pounds, against 706,945 pounds for 1912. The inclusive cost for the earlier year had been 1s. 10.27d. (45.11 cents), which had been reduced in 1913 to 1s. 7.57d. (39.55 cents). The gross price obtained for rubber in 1913 was 2s. 10.23d. (69.41 cents) per pound against 4s. 3.17 d. (103.83 cents) in the previous year.

With the view of reducing cost, they had lowered wages and thus lost a certain proportion of the force, but only in the Chinese section. The Indian contingent had been increased and they were looking forward to the practically exclusive employment of Indian labor.

He considered the statistical position of rubber was satisfactory, deliveries keeping pace with production. The shipment of a large quantity to America showed that manufacturers in that market were appreciating the advantages of plantation rubber. He added that the leading rubber goods manufacturers of the world now relied on plantation rubber more than on any other raw material.

In conclusion Mr. Lampard said he thought the fall in rubber had prevented the flotation of wild-cat rubber plantation companies. Moreover it had facilitated the introduction of economies, would increase the consumption of rubber and would kill the wild rubber industry. Statistics showed that the London receipts of wild rubber for the first quarter of the present year were only one-half of those a year ago. The policy of selling rubber for forward delivery he maintained to be sound, and calculated to develop the use of the plantation product.

TREATING LATEX IN LONDON.

The "Financial Times" of London states that a concern, known as the Robinson Securities Syndicate, Ltd., proposes to bring latex direct from the forest trees to the London manufactory, to be scientifically treated, so as to secure an evenness of grade. It is said that the transport of the latex to London in its natural state is a revelation, while the rubber already produced from such latex is reported to be of excellent quality.

WHAT THE RUBBER CHEMISTS ARE DOING.

[Extracts from recent articles on the Chemistry of Rubber which have appeared in some of the foreign publications.]

JELUTONG AND THE METHODS FOR SEPARATING ITS RESINS.

IN "Le Caoutchouc et la Guttapercha," No. 114, G. Noyer makes a contribution on "Jelutong and the Methods for the Separation of Its Resins." According to Dubosc, a previous investigator of this subject, treating crude Jelutong with acetone and ether, a product is obtained which after repeated crystallization can be shown to consist of two substances. These substances differ (1) in their melting points, which are respectively 80 degs. and 105 degs. C.; (2) in their boiling points, which are 255 degs. and 280 degs. C.; (3) in their solubility in acetone and chloral; (4) in their reaction with nitric acid; (5) in their reaction with sulphuric acid. These resins are completely unsaponifiable and produce a high optical rotation. The author believes that there is a simple relationship between Cholesterin and the purified Jelutong resins. The latter he regards as isomers of Phytosterin or Plant-Cholesterin. Cholesterin gives a characteristic reaction with propionic anhydride, the so-called Cloez reaction. By the action of this reagent on Cholesterin, a blue color is obtained which turns green, orange and finally red. On treating a sample of Jelutong resin, which has been purified by successive recrystallizations, with propionic anhydride on the reflux condenser, the mass first of all becomes blue, subsequently turns green, then orange and finally red. With acetic anhydride a violet color is obtained which subsequently turns black. The resulting resin propionate has a melting point between 98 degs. and 100 degs. C. Cholesterin propionate melts at 98 degs. C. The resin acetate melts at 110 degs. to 112 degs. C. Cholesterin acetate melts at 113 degs. C. The resin acetate, just as the Cholesterin acetate, is saponifiable with boiling water, in the former case, the original resin with correct optical rotation being obtained.

Furthermore, the reactions of Jelutong resin with sulphuric acid are analogous to those of Cholesterin. As a result of these and further analogies between Cholesterin and Jelutong resin, the author suggests a method of separation of the resin from the rubber which is based on the well known properties of Cholesterin with oxidizing agents. Potassium permanganate, chromic acid, and sulphuric acid oxidize Cholesterin to acids which are soluble in ammonia. Accordingly it is suggested to take Jelutong and boil for three or four hours with one of the above oxidizing agents. The resin is converted into Cholesterin acid, which is easily separated from the rubber by means of ammonia. The physical properties of the residual rubber are claimed to be equal to those of the rubber obtained by acetone extraction.

If crude Jelutong is fractionally extracted with acetone in a Soxhlet extractor, three distinct products can be isolated, melting respectively at 141 degs. C., 115 degs. C. and 103 degs. C. A mixture of equal parts of these resins melts at 82 degs. C. These three bodies are isomers, their chemical composition being in accordance with the formula $C_{28}H_{46}O$.

MR. DITMAR'S EXPERIMENTS WITH RUBBER SUBSTITUTES.

In the "Gummi Zeitung," Vol. 28, page 998, R. Ditmar publishes an investigation on Factis (rubber substitute). The author describes an apparatus for measuring the elasticity of substitute, the principle of which is as follows: A small cylindrical vessel is charged with the pulverized substitute. A closely fitting metal plate is then inserted into the cylinder so that it lies on top of the substitute. The plate is connected by means of a vertical rod with a second horizontal plate, which latter faces a scale. On this top plate a given weight is put, the compression of the substitute being noted on the scale. The weight is then released and the return

again noted. This return is regarded as being proportionate with the elasticity.

The author carried out a very large number of experiments for the purpose of determining the nature of the products obtained by varying the amount of sulphur, the length of the period of heating, the state of oxidation of the vegetable oil, and the addition of paraffin wax and mineral oil.

Considering nonoxidized rape seed oil and sulphur, it was found that a product containing 32 per cent. sulphur on the weight of the oil gave the most desirable substitute. If oxidized oil is used, it was found that equally good results can be obtained by using much less sulphur, only about 22 per cent. being necessary to give a very good product. The rape seed oil is oxidized by blowing air through the oil for a period of five hours, the oil being heated to 250 degs. C. For the purpose of studying the action of mineral oil on substitute the author worked with a mixture containing 100 parts non-oxidized oil, 26 parts of sulphur, and mineral oil in proportions from 5 to 10 parts. The samples when freshly prepared did not look very favorable, but on standing for several weeks the products had become sufficiently hard to be available for general manufacturing purposes. Using oxidized oil on the contrary, it was found that the addition of mineral oil in amounts in the neighborhood of 5 per cent. yielded products which were sufficiently firm, even immediately after manufacture, to be available for manufacturing purposes.

Another series of experiments was carried out using 28 parts of sulphur for 100 parts of oil, and it was again found that in the case of the oxidized oil it was possible to add a larger amount of mineral oil than when nonoxidized oil was used.

The author finally studied the addition of paraffin wax to substitute made from oxidized and nonoxidized rape seed oil. In this case it was found that the amount of sulphur added to the oil was a determining factor as to whether the addition of paraffin gave satisfactory results or not. Using 24 per cent. of sulphur on the weight of the nonoxidized oil, as much as 15 per cent. paraffin was found to give a satisfactory substitute, whereas in the case of the oxidized oil this proportion of paraffin was found to be exceedingly unsatisfactory. On the other hand, using 26 per cent. sulphur on the weight of the nonoxidized oil with the addition of 5 per cent. paraffin wax, there resulted very unsatisfactory products, whereas the oxidized oil in this case, even with 10 per cent. paraffin wax, gave fairly good results. Similar anomalies were noted in two other series of experiments using 28 per cent. sulphur and 30 per cent. sulphur on the weight of the oil.

The author also carried out analyses on many of the substitutes which he prepared, determining the loss of sulphur owing to volatilization in the heating process, the total sulphur in the substitute, the free sulphur and also the free oil. It was found that the volatilization of the sulphur was uniformly greater in the case of the nonoxidized oils than in the case of the oxidized oils. This is attributed to the higher viscosity of the oxidized oils. The substitutes manufactured from the nonoxidized oils had higher free oil and free sulphur contents than those products manufactured from the oxidized oils. From the nature of an oxidized oil, one would expect just the reverse to be true regarding the free sulphur content. It is supposed that the oxidation of an oil results in the addition of oxygen to some of the unsaturated double bonds present in the oil. An oxidized oil, therefore, is more saturated than nonoxidized oil and one would therefore expect it to be less capable of adding sulphur. But just the reverse is found to be true.

VARIOUS SYNTHETIC RUBBER PATENTS.

British Patent No. 21,173, 1912, has been granted D. Spence, A. P. Clark and the Diamond Rubber Co. for "Improvements

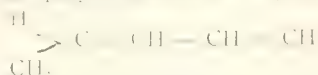
Relating to the Production of Rubber-like Substances."

The reaction consists in converting, by simple means, alcohols of certain types into substances having all the characteristics of natural rubber. It is found that alcohols yielding, by dehydration, hydrocarbons of the type



where the free valences are saturated by hydrogen or by any hydrocarbon complex, can be readily converted into rubber-like compounds. The conversion of the alcohols into hydrocarbons of the above type is in some cases effected merely by the application of a suitable temperature, though preferably by means of substances which individually or together effect dehydration and polymerization. Such substances are glacial acetic acid, acetic anhydride, anhydrous acid, potassium sulphate and formic acid.

A series of U. S. Patents, No. 1,084,333 to No. 1,084,338, inclusive, has been issued to Fritz Hofmann and others, assignors to Farbenfabriken vorm. Friedr. Bayer & Co. Patent 1,084,333 discloses a process for producing a caoutchouc-like substance by the polymerization of alpha-methylbutadiene:



The polymerization may be effected merely by the application of heat or by the addition of such substances as acetic acid, acetic anhydride, butyric acid or creosote.

The remaining patents claim as new substances the vulcanized products obtained by vulcanizing certain polymerized hydrocarbons having the properties of caoutchouc-like substances. The hydrocarbons polymerized are isoprene, erythrene, erythrene derivatives, alpha-methylbutadiene and mixtures of these hydrocarbons. The patents claim as new substances the products obtained by vulcanizing these polymerized hydrocarbons either with sulphur chloride or with sulphur.

THE ORIGIN OF THE WOOL BOOT.

ONE of the pioneers in rubber footwear, who is a modest man and specifies that he be made the subject of no personal reference, gives the following very interesting history of the birth of the wool boot and its complement, the lumberman's over:

"In 1877, on a visit to the shoe jobbing house of Pancost, Sage & Morse, of Rochester, New York, Mr. Sage, sr., took me to see an article in which he was much interested, which was being made by a couple of foreigners—Frenchmen, I think—who had a little workshop in a cellar, and were there making a felt boot. This was the first attempt at making anything of the kind in the United States.

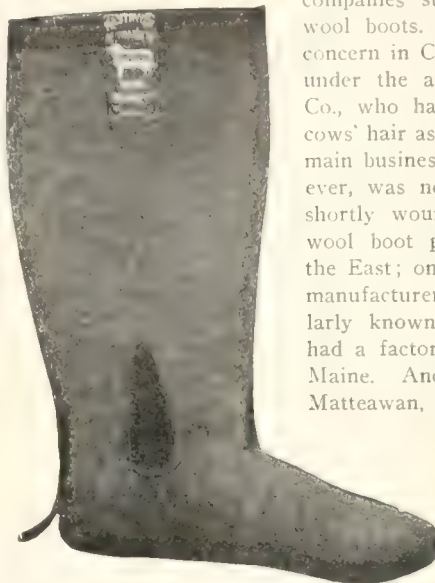


ONE MODEL "PERFECTION" FOR WOOL BOOT.

"Mr. Sage's idea was that this felt boot would be a capital thing if a rubber sole and vamp, or a rubber over-shoe, might be cemented on and made integral with the felt boot; and he sent on several pairs to New Haven, to which we attached the rubber foot part, according to his idea. And the way the felt foot soaked up the cement—at about 80 cents a pound—was something fearful. The boots were sent out to Rochester, and after a trial were condemned because the felt boot absorbed the perspiration from the wearer's foot, and there was no way

of drying it out; so the matter was dropped for the time being.

"Shortly afterwards it appears that these foreigners in some way connected with E. G. Studley, of Grand Rapids, Michigan. It probably came about through the fact that Mr. Studley's father-in-law was a manufacturer of felt goods at that time in Mishawaka, and I always supposed that these Frenchmen went to Mishawaka, and in that way became acquainted with Studley, who induced them to go to Grand Rapids, where he opened up a factory which flourished for many years in the wool boot business. The article met with such favor that a number of



WOOL BOOT.

companies started to manufacture wool boots. One of these was a concern in Chicago, or thereabouts, under the auspices of Armour & Co., who had wool remnants and cows' hair as by-products from their main business. This concern, however, was not a success, and was shortly wound up. Then several wool boot plants were started in the East; one by a prominent shoe manufacturer at that time popularly known as 'Joe' Davis, who had a factory somewhere down in Maine. Another was started at Matteawan, New York state, and another over in Orange County at Howells Depot. About the same time the Mishawaka Woolen Manufacturing Co. commenced to make the

felt socks which gradually developed into the wool boot business, and after that a factory began operations at Hudson, Michigan.

"The rubber part was originally a plain rubber overshoe called a 'lumberman's' shoe. This was so low that it was not much protection against deep snow, and somewhere about 1885 one of the big shoe jobbers in Chicago, who had made a large contract for several hundred cases of felt boots, said that if I could get up a better overshoe than had been used to go over the boots, he would not only give me a large order for them, but would get us a correspondingly good order from another shoe jobbing house which had joined him in taking the entire product of one of the felt boot factories above mentioned. Under the stimulus of this proposition I got up what is now called the 'Perfection,' and gave it that name, adopting that form of foot covering because it was the cheapest form in which an overshoe could be made and come up high enough on the ankle, it being the old rubber buskin shape, and not shaped like the arctic or 'Brogan.' This had great vogue and sold off those two lots of felt boots like hot cakes, as they were put up in what was called a 'Combination,' that is, the overshoes fitted over the felt boots, the felt boots being sent to the Candee factory for that purpose, where they were fitted to the overshoe, repacked and forwarded to Chicago. The next year the other factories copied the shoe, appropriated the name 'Perfection,' and have been making them and calling them by that name ever since."

Tires to the value of \$180,823 were imported into the Philippine Islands during the year 1913, and other accessories amounting to \$90,414. During that year 624 automobiles were imported, which amounted in value to \$886,710. This represents an increase of 196 cars over the imports of 1911 and an increase in value of \$319,533, while accessories show a gain for the same period of \$123,640.

Rubber Arbitration Extracts.

The obvious advantages of commercial arbitration have been set forth in THE INDIA RUBBER WORLD with some frequency, during the last two years, and much consideration has also been given to this subject by the Rubber Club of America. One point to be emphasized is the relatively insignificant expense of this method of procedure as compared with the cost of litigation. In the various cases arbitrated by the Chamber of Commerce of the State of New York, where from one to three arbitrators were engaged, the cost in no instance has exceeded \$150, and in some cases has fallen below \$40. In other words, the expense is negligible.

ARBITRATION of differences between buyers and sellers of rubber is an old story in London. In New York, however, the custom is not as general. It is therefore of interest to be able to read a series of questions and answers at one of the arbitration proceedings. It may be said in passing that the case was settled to the satisfaction of all and at trifling cost. The rubber was unsmoked Eastern Plantation sheet and biscuit, the shipment calling for fair average quality. The arbitration proceedings ran as follows:

Statement by Mr. A.—

It may perhaps be not amiss just at this moment to say that perhaps this decision will be more far reaching than anticipated when we took up this question. If the standards that we are passing on today are to be accepted by merchants as being a proper delivery, the merchants in turn shipping those to manufacturers, and upon orders taken from them in the course of the sale of this quality, afterwards we being compelled to accept this as tender of the quality, and then being delivered to the manufacturers in accordance, and upon receipt by them, they refusing to accept it as proper tender of the quality bought, this would put the operator and the dealer in a very bad position. We have no redress from the manufacturers unless we wish to enter into a legal battle with them, if we accept this quality as proper tender, and when tendered by us to the manufacturers, and afterwards being rejected by them as not being the proper tender, in such cases that would be the result. Therefore, if this quality upon which we are arbitrating today is to be established, it will create a standard, so to speak, for future tenders, that may pass in the transactions between merchants. This tender of sheets and biscuits that was made by Company was rejected by us on account of not being a proper tender of the quality. I just want to say that the quality that was handed to us we claim is the quality that is sold in London as sheets and biscuits and not first latex sheets and biscuits. I want to emphasize that distinction.

Statement by Mr. B.—

I object to the introduction as evidence consisting of circular letters from English houses. In the first place, the contract is made based on New York quality. There are contracts made in the trade as understood in London. There is nothing in these contracts stating the qualities as understood in London. Mr. A. has stated that there are different qualities sold in London as first and second. I do not dispute that, but we do not sell these goods, shipment in London; as a matter of fact, the shipment was made from Colombo.

Mr. C.—An arbitrator.

I know that there are London rules and regulations, but I am not familiar with them, except that I know there are grades, and they buy on description.

Mr. A.—I wish to state that the contracts do not say that the quality is represented by New York standards or anything else.

Mr. B.—The intent of the contract as to delivery and determination of the quality, is always understood as to the port or city or town or place where the rubber is delivered. There is nothing stated about delivery in London. The contract states delivery in New York. Consequently the determination of the quality would be as understood in the trade, and not as understood in London.

Question by Mr. A.—

Testimony of Mr. D., a weigher who assisted in drawing the samples.

Q. Did you find the rubber in any of the cases damp and mouldy? If so, to what extent? A. 15 to 25 per cent.

Q. When you say this rubber was damp and mouldy, did you find it wet? Did you find it wet in any part of the case? A. Certainly, in the center.

Q. How did you find the general condition of the cases that you examined? A. The dampness was in the middle and also mould. Some cases were mouldy throughout.

Q. Was it a wet mould or dry? A. Dry on the outside and in the center it was damp.

Q. Was the rubber taken out of the cases? A. Yes.

Q. Did you get all the rubber back in the same cases afterwards? A. No.

Q. You state the rubber was damp. Don't you think you could have got it all back if the rubber was stuck together or mouldy? A. It would be impossible to get it all back.

Questions by Mr. B.—

Q. Taking these samples as drawn and the condition of the rubber as found in the cases, the way they were sealed and wrapped up, would you say they would deteriorate or improve or change in any way from your knowledge of rubber since they have been here? A. I don't think they would.

Question by Mr. A.—

Q. Any rubber of any nature that has been taken from cases or bags, drawn out from the lot, separated and put in small packages, do you mean to say it will contain the same condition of moisture as if left in the case? Do you mean to say the samples would be drier or wetter, or that they would be in the same condition as when they were drawn? A. Naturally they would be a little drier packed in a bag.

Statement by Mr. B.—

If Mr. D. testifies that the samples have changed since being taken out of the cases I do not think the arbitrators can render a decision as to how much they have gone back.

Testimony of Mr. E.—

By Mr. A.—Q. When in London on different occasions you familiarized yourself with different qualities of rubber that were being offered and sold and bought here in this country on London standards? A. Yes.

Q. Deliveries made against contracts that are not up to the London standards, have their rejections been upheld? A. They have arbitration there.

Q. Have you in your experience in the United States rejected plantation rubber or otherwise on account of inferiority of quality? A. Several times.

Q. From London standards? A. Yes.

Q. This particular contract, there was nothing stated in it as understood in London? A. No.

Q. You did not purchase it in that way with that intention at the time? A. The intention when we bought that rubber was that it was to be to the standard.

Q. As it was understood in London? A. As it was understood in London.

Q. In making sales here of rubber, you make sales as understood in London and sometimes not? A. I generally sell according to sample or quality.

Q. As per sample? Then you sell sometimes as understood in London? A. Very seldom.

Q. Then what has the London standard to do with this case? A. A great deal.

Q. But you sell rubber both ways. You have made contracts as understood in London; have you not? A. I do not know whether we have ever made one.

Q. Never have? You sell simply on New York standard? A. On our own standard.

Q. This particular transaction was made on fair average quality and usual good quality in New York. We did not sell you this rubber on any of your own standards that there may be in New York.

Statement by Mr. B.—

This contract was made in New York. It is dated in New York. The rubber was delivered in New York. Now I do not see how they can bring in any London business. I would like to have a decision on that as to the London business. The contract is made here, the sale of it and delivered in New York.

Question by Mr. B.—

Q. You make your own standard? There is a recognized standard for rubber in New York. A. I know there is, but I say New York standard follows London.

Testimony of Mr. F.—An arbitrator.

By Mr. B.—Q. In your opinion a contract calling for fair average quality unsmoked sheets and biscuits, and another contract calling for good merchantable quality unsmoked sheets

and biscuits, and another contract calling for unsmoked sheets and biscuits as per London standard, do you consider there are any differences in the quality or description, any difference in the three standards mentioned? *A.* Yes.

Q. In other words, we do not recognize unless specifically stated in contract here the London standards? *A.* We do not unless so stated.

Testimony of Mr. C.

By Mr. B.—*Q.* You sell rubber I presume on New York good merchantable quality or New York types, or sometimes on London types? *A.* Yes.

Q. You consider there is a distinction, a difference between grades, do you not? *A.* We recognize London standards but go a little on our own judgment. We do the same on other grades of rubber. There are certain customs here in the trade of accepting certain blemishes if not too great. We do not know whether they would be rejected in London or not, and it is difficult to answer the question positively.

Q. If you were selling rubber based on your understanding of New York conditions and delivering to manufacturer and importer, and he desired you to put in as understood in London, would you hesitate about it? *A.* Very decidedly so.

Q. Then you consider there is in your mind some difference? *A.* There is a difference, but more in settlement and method of settlement. I mean by that financially. In London they determine to take a delivery of what is within certain grades. Here no such custom prevails.

Q. The only reason you hesitate is that you are bound to take rubber with allowances? *A.* Yes.

Q. Unless it states as understood in London you take New York determination of quality? *A.* There is this distinction. Dealers understand here London terms and conditions in selling to dealers, and I am necessarily more careful than in selling to manufacturers because they understand the terms and recognize them.

Testimony of Mr. F.

By Mr. A.—*Q.* Do you recognize a difference in quality between usual good quality and fair average quality? *A.* If I stated that before I was probably misunderstood. I intended to say there was a difference between London standards and good merchantable fair average quality.

Q. London standard, good merchantable—is that expression ever used in the trade? *A.* It is.

Q. A contract calling for good quality in one and fair average quality in the other, is there any distinction? *A.* I see no difference between fair average quality and usual good.

Testimony of Mr. G.—Another weigher.

By Mr. B.—*Q.* When you drew the samples with Mr. did you find any excessive amount of moisture in these goods? *A.* No, it seemed to be pretty dry.

Q. The moisture then was not apparent? *A.* No, not apparent.

Q. In these particular samples the moisture was not so it was running off? *A.* Oh, no.

Q. Could you see it like dew on the grass? *A.* No.

Q. Was there any excessive amount of mould on these sheets? *A.* There was a slight amount of mould, but I would not call it excessive.

Q. Was it dry or wet? *A.* Dry.

Q. Is it your opinion that if this rubber was moist and mouldy and stuck together that it could be placed back in these cases? *A.* My opinion is that it could be in most cases. There would be such a small proportion left out of the cases that it would not amount to more than one bag or one case at most.

Testimony of Mr. C.—

By Mr. A.—*Q.* In accepting deliveries of plantation rubber in your experience what percentage have you considered acceptable as a fair delivery, what percentage of mould and dampness have you considered a fair percentage for acceptance of a good delivery? *A.* I do not think we settled on any percentage. We look at the rubber and form our opinion. If it is all right and does not contain too much objection we accept it. There is no fixed percentage I have heard of.

Q. If some of the rubber that is in the lot is absolutely bad would you consider that it had to be accepted in the lot tendered? *A.* No.

Q. If part of a lot that is tendered you is in such condition that it is not acceptable, the custom of the trade is that you have the right to reject the lot? *A.* It depends entirely upon the contract. On this contract you could not reject it, in my opinion. You could reject the portion, and the seller has a perfect right to make another tender. He could tender the same over, having withdrawn the portion that is not up to the standard.

Q. Then according to your answer you have the right to reject the entire lot if part is inferior? *A.* It depends upon the contract. On a specified lot of Ceylon rubber if you find a

portion of it inferior you are entitled to reject it, in my opinion; but on a straight contract the seller has the right to refill it.

THE TESTING OF MECHANICAL RUBBER GOODS.

AS will be recalled, a conference of experts interested in the question of standardizing the specifications and tests of mechanical rubber goods, met at New York on December 7, 1911. On that occasion a committee was appointed, consisting of C. R. Boggs, Simplex Wire & Cable Co.; W. S. Clark, General Electric Co.; W. A. Del Mar, New York Central & Hudson River Railroad Co.; W. B. Geiser, New York Central & Hudson River Railroad Co.; J. P. Millwood, consulting chemist; P. Poetschke, Lederle Laboratories, and H. B. Rodman, Pennsylvania Railroad Co. At a later date were added: E. L. Willson, Hazard Manufacturing Co., and J. B. Tuttle, United States Bureau of Standards.

The committee decided to confine itself to the development of a specification and an analytical procedure for compounds of the 30 per cent. Pará type, by which samples of different rubbers were analyzed. Twelve regular committee meetings were held, in addition to numerous sub-committee meetings. After nearly two years' work the committee was in a position to submit on October 1, 1913, a preliminary analytical procedure, and a chemical specification for a compound containing 30 per cent. of *Hevea* rubber with mineral fillers, with a request that both these proposals should be considered tentative in order that the results of experience during the ensuing year should ultimately be incorporated in a final report.

The most important parts of the above named provisional reports have been reprinted by the Simplex Wire & Cable Co., Boston, for distribution among those interested.

Meanwhile the Bureau of Standards has issued Circular No. 38, with illustrations, describing the methods of rubber testing in use at that institution, to which a supplement has since been published, embodying the progress made by the Joint Rubber Insulation Committee. This publication must not, it is remarked, be taken as an official indorsement of the methods indicated.

In the "Explanation of Specification" the committee states that experience has shown that compounds with the characteristics of good *Hevea* rubber may be relied upon to be more permanent than those made of rubber of other grades. It is further stated that the term "*Hevea*" applied to rubber means rubber from the *Hevea Brasiliensis* tree whether wild or cultivated, and regardless of the locality in which it has been grown. Much interest will, therefore, attach to the final report of the Joint Rubber Insulation Committee, which may be looked for about the end of the current year. Colonel Samuel Reber, of the United States Signal Corps, has presided at the various meetings of the committee.

The annual report of automobile statistics for New York State showed the total amount of license fees collected by the State—owners', chauffeurs' and dealers'—in 1913 to have been \$1,275,727. Similar collections from the opening of new registrations on February 1 to April 25, amounted to \$1,008,598, about half of which, or \$556,337, has been contributed by New York City.

New companies were incorporated during April with individual capitalization of \$100,000 or over and capital increases authorized involving the sum—including all industries—of \$186,752,000, of which charters filed in the Eastern States represented a capital of \$136,185,000. Among the largest of these was the Sterling Gum Co., a New York corporation with a capital stock of \$6,000,000, while an incorporation of perhaps greater interest and importance to the rubber industry was that of the Norwalk Tire & Rubber Co., of Connecticut, capitalized at \$1,500,000. Of the Delaware incorporations might be mentioned the Malaysian Chicle Co., with a capital of \$500,000.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE accompanying illustration will give some idea of the variety of molds made by the Die Sinking & Machine Co., of Akron. This company does not manufacture any of the larger molds, devoting its attention to one line of manufacture



and specializing in molds for mechanical rubber goods and druggists' sundries. It was established fifteen years ago, operating at first under the name of Herrington & Son, and was the first in this country, or probably anywhere, to make a mold that would successfully produce hot water bottles and syringe bags. While the company claims that no mold is too difficult for it to undertake, it makes a special feature of its department for bag and bott'e molds. This company

has recently issued an attractive catalog, which illustrates molds for numerous articles not shown in the cut herewith.

* * *

Incorporation papers have been granted at Columbus, Ohio, to the Pike Rubber Co., located at 126 West South street, Akron, with a capitalization of \$50,000. The officers are O. C. Pike, president; Ed Voris, secretary; Frank Selzer, treasurer, and Fred Grethers, manager. Mr. Pike, who is now engaged in the manufacture of rubber sundries, is a man of large experience in the rubber business. He says that the firm will remain in its present location for a while. Recently a large manufacturing building was bought by the parties backing this company, and this building, it is thought, may be occupied by the company in the near future.

* * *

The Lincoln Rubber Co. has been organized under the laws of the State of Ohio, with a capitalization of \$10,000. John Hadfield is president, R. G. Nevin secretary and treasurer. This company has bought out the Hadfield Rubber Co., and is manufacturing a line of general rubber sundries, including a special high grade surgeons' glove, with an additional feature of enlarged knuckles, so that there will be no binding when the hand is shut. This glove is known as the "Knuklfit."

* * *

A series of meetings has lately been held at the factory of the B. F. Goodrich Co., attended by foremen, inspectors, managers and superintendents of the plant to the number of almost 1,000, to hear talks on safety, and to discuss ways and means of increasing efficiency. Mr. E. C. Shaw, the works manager, addressed those present on the subject of "The Ideal Working Condition," while W. W. Williams, representing the National Association of Manufacturers, gave a safety lecture, and moving pictures illustrating some of the things that make for safety in big plants were shown. This company maintains an elaborate department of safety and hygiene, which gives advice to the men on the treatment of injuries, and looks after them generally. The object of this campaign is to make "Safety First" not only a part of the company's tire design and construction, but to have this element enter into the processes of manufacture, thereby adding to the efficiency of the 15,000 workmen scattered over an area of 75 acres.

An improvement in dredging sleeves, which will be particularly appreciated in general engineering where this is an article of importance, has been made by the Goodrich company. The durability of dredging sleeves, no matter how good their other features, has heretofore been susceptible of serious impairment

on account of excessive expansion. This difficulty has, however, been largely overcome by an improvement in fabric construction applied to both the "Pinnacle" and "Goodrich" grades of dredging sleeve. A fabric of special design is employed, which in the new sleeve as thus perfected is said to reduce expansion to a minimum.

Public schoolteachers to the number of 500 recently made a Saturday visit to the Goodrich plant on an invitation extended by the company. The party was divided into two sections, and each group was provided with guides, who explained every phase of the work.

* * *

The Firestone Tire & Rubber Co. is again making additions to its plant. When plans were made for the new building added in 1911, it seemed that this plant was large enough to take care of the company's needs for years to come. However, in 1912, it was necessary to again expand, and further additions were erected; 1913 found the company again cramped for room, and it again expanded; 1914 is but a repetition of the past, and the demand for Firestone tires makes it again necessary to add to the factory. One of the present wings 60 feet wide and five stories high will be extended on the north 125 feet. On the south one of the wings will be extended 125 feet, with the basement and first floor covering a space 140 feet in width. This will give approximately 95,000 square feet additional floor space.

During 1913 three new boilers having a capacity of 900 horsepower each were installed by this company, adding 2,700 horsepower to the already large boiler capacity. A new 4,000 kilowatt generator and steam turbine is now to be installed to furnish additional power needed for the extensions. The present switchboard will be replaced by a new gallery board 70 feet in length. After two years experimenting in the manufacture of bicycle tires, this line has been added to the company's production. These tires are made with two styles of treads, the non-skid, which is an exact reproduction of the automobile non-skid design, and also a corrugated tread. The company recently added generator tubing, pump tubing and horn bulbs to its line of accessory products, the horn bulbs being made with a standard thread, and with either brass or nicked mountings. It is also now prepared to furnish friction tape in one, two and four-ounce rolls. Heretofore nothing smaller than one-half pound rolls has been furnished by the company.

C. H. Sorrick, formerly head of the carriage tire sales of the Firestone company, now has charge of the pneumatic tire sales, taking the place formerly held by George J. Bates.

* * *

The receivers of the Royal Rubber Co. have been offered \$34,000 for the company's lands and buildings, the same comprising 2¼ acres, with 150 yards of railroad frontage, located near the center of Akron. The court upon investigation, not considering the offer high enough, instructed the trustees to take care of the insurance premiums and a few small necessary debts contracted by the receivers, and ordered that the land and buildings be offered publicly for sale.

* * *

The Kelly-Springfield Tire Co. has just completed one of its new buildings, celebrating the termination of this work by a factory ball and luncheon.

* * *

Since January 1 of this year, when all employes on the factory payroll of the Goodyear Tire & Rubber Co. underwent physical examinations, every prospective employe has submitted to a similar examination. This is not so formidable as it may sound, nor does the discovery of minor ailments render a candidate ineligible for employment, but it enables the company to place him where he can give the maximum of service with

least possible loss to himself. This method of placing employees is supposed to be largely responsible for the fact that with a force of 7,500 men, not greatly larger than the number employed last year, the company is producing nearly double the product turned out at that time.

* * *

A month or so ago when General Blanton of the Mexican Rebels was attacked by the Federals on an automobile trip from Ensenada to Matamoras, bullets literally riddled the car and all four pneumatic tires. The vital organs of the car were not damaged, and the tires were quickly repaired. This matter came to the attention of Capt. Alfred Aloe, depot quartermaster of the United States Army at Galveston, under whose supervision the United States automobiles are maintained at that place, and so impressed him that he felt it advisable to change from pneumatic to solid tires, thus obviating the danger of flying bullets putting tires out of commission.

* * *

The Indianapolis Speedway record in 1911 was 74.59 miles per hour, made by Ray Harroun. Dawson won in 1912 at a speed of 78.72 miles per hour. The 1913 race was won by Jules Goux in a heavy Peugeot No. 16 at an average speed of 75.93 miles per hour. The preliminary tests of machines and tires which have been made on the Speedway by the contestants indicate that the former records will this year be broken.

The balloon "Goodyear" recently made its record altitude flight at Akron, reaching an altitude of 8,700 feet.

H. P. Harris, an experienced aviator, lost his life at Silver Lake May 3 while making a dip. One of the wings of the biplane broke, evidently the material not being strong enough to stand the immense strain occasioned by the change of flight.

THE RUBBER TRADE IN BOSTON

By Our Regular Correspondent.

"THE rubber business is good." "The rubber business is rotten." These are the answers to your correspondent's question, "How's trade?" The fact is that in nearly all lines business continues somewhat conservative, and the man who says that it is "rotten" is now complaining because his customers, having stocked up, are waiting for a retail demand before placing further orders; while the man who declares that business is excellent may be whistling to keep up his courage, just plain well—prevaricating.

The above paragraph may sound pessimistic, but it is the conclusion arrived at from a more or less extensive canvass of the trade in this city. The call for automobile tires naturally is good at this season, and yet there are some complaints that it isn't what it should be. This in part is laid to the backwardness of the spring season, which has not only held back pleasure riding, because of the cold, but has greatly interfered with the regular spring road work in the suburban districts.

The rubber clothing business has been unusually good for many months, and now there is a lull, which is not unwelcome to the manufacturers who are behind in their orders. However, salesmen are encountering a rather widespread indisposition on the part of their customers to order largely at this time, hence their report of quiet trade. Mechanicals are in continued steady, but not heavy, demand. There is a manifest policy on the part of many large industrial establishments to buy from hand to month, and to rely on the mills or the distributing agencies to carry stock, rather than stock up heavily as in the past. Drug-gists' rubber goods manufacturers report some large orders. The footwear people are away behind normal, and salesmen are pushing customers hard to get detail orders. Those concerns making tennis shoes, however, are working their forces overtime, so good is the demand for this low priced style of footwear.

Speaking of footwear, the wonderful increase in the demand for rubber soled leather shoes is a marvel of the trade. Rubber soles are in demand in one-third to one-half of the shoe factories in the country. The consequence is a large increase in the number of factories now turning out rubber soles. There have been for some time quite a number of manufacturing concerns that turned out a greater or smaller supply of rubber heels. With hardly an exception these factories have added rubber soles, with or without attached heels, to their production. Some of them make good soles, which contain a decent proportion of new rubber. Others are using so much reclaimed rubber and rubber substitute that they can hardly be called rubber, except by courtesy. Manufacturers who buy "rubber" heels at less than four cents a pair, and soles at proportionate rates, will kill the demand for rubber soled footwear, for such cheap stuff breaks across the bend of the foot, and any one having such an experience is apt to judge all soles alike and go back to leather. Rubber soled footwear has many real advantages, but good rubber is necessary in its manufacture.

About the middle of last month an important "luncheon" was held at the American House in this city, under the auspices of the Chamber of Commerce, when "New England and the Foreign Trade" was the subject of discussion. The Secretary of Commerce was the principal speaker, and ex-Mayor Fitzgerald presided. As a result of this meeting a foreign trade expert will be hired, who will acquaint manufacturers with foreign methods, assist them in foreign selling campaigns, aid in bringing foreign buyers to New England, and also in securing competent foreign agents for manufacturers. To do this subscriptions were solicited, and a large number of firms have already subscribed One Hundred Dollars each year for three years, while to this the Chamber of Commerce has agreed to subscribe One Dollar for every Two Dollars raised by subscription. I notice in the list of those thus subscribing the names of the Boston Woven Hose Co. and Thomas A. Forsyth, president of the Boston Belting Co.

Two handsome pieces of rubber footwear advertising have just been turned out by the A. W. Ellis Advertising Co. for the Hubmark Rubber Co., of this city. They are of heavy cardboard, so folded as to give six pages on each side, and on one side wonderfully graphic representations of the various boots and shoes made under this trade mark. These half-tone engravings are embossed with such detail that every seam, every overlay, every buckle, every lace and every label is brought into relief; and this, with the color printing and the varnish, makes these folders almost as good as the samples themselves, as far as looks are concerned. This advertising house is doing excellent work for the Hub-Mark rubbers, and this particular department is under the direction of Chester J. Pike, whose many years of experience in the rubber footwear business specially fit him for this work.

The sale of the going business of the Walpole Tire & Rubber Co., which was advertised to take place at Walpole on May 11, was not successful, because only one bid was offered, and that was less than the upset price fixed by order of the court. This upset price was \$1,150,000, and the one bid received was \$800,000, this bid being made by a representative of the stockholders' committee. This auction offering being ineffective, the matter will be again brought before the court on June 1 at 10 a. m., and as under the law sale of the company's real estate must be advertised once a week for four weeks prior to sale, a sale cannot be held before about July 1. Endeavors are being made to allow sale to be effected without any limit as regards bids. There is now some considerable unwillingness on the part of the stockholders to have a sale at this time, for the receivers are carrying

along the business at a satisfactory profit. It is a growing sentiment that with a continuance of such a showing it is likely that a fair price can be obtained within a reasonable time.

* * *

Quincy Tucker, Boston representative of the Aluminum Flake Co., of Akron, reports that not only is the demand for this product increasing steadily from rubber manufacturers, but that new uses are constantly being found for it in other industries. Mr. Tucker is somewhat of a traveler, and has spent much time in the South American wilderness. Having made the dangerous trip through the falls and rapids of the Madeira river about ten years ago, before the present railroad work was resumed, Mr. Tucker can fully appreciate the difficulties encountered by Colonel Roosevelt on a near-by tributary without competent pilots and in unknown waters. Mr. Tucker has had his own experiences on the ocean wave and the turbulent river, and will confine his sea trips this year to daily voyages from and to Hull, where he will take up his abode for the summer season.

The Interchangeable Rubber Heel Co., of Taunton, which has been manufacturing a patent rubber heel that can be attached to and detached from boots and shoes, has recently been reorganized under the name of the Taunton Rubber Co., and is now manufacturing rubber heels with the company's brand, as well as making similar heels for those jobbers and distributors who may wish to place their own lines on the market. It is reported that the company contemplates starting the manufacture of rubber soles for shoe manufacturers. George Greene is now general manager of the company.

* * *

At an adjourned meeting of the directors of the Patterson Rubber Co., of Lowell, Mass., held Saturday, May 23, the resignations of John S. Patterson as president and director, and James M. Patterson as vice-president and factory manager were accepted, and these gentlemen, who had been identified with the company since its establishment, severed their connection with the corporation. John H. MacAlmon was elected a director, and Walter N. Macdonald was appointed general factory manager. The offices of president and vice-president were not filled at that meeting. The company continues manufacturing automobile tires, which are receiving the commendation of the trade.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent

MUCH improvement can be noted in the general condition of the rubber trade here during the past month. The warmer weather of the last few days has given a marked impetus to garden hose sales, and local shippers have been compelled to work over time in order to keep pace with the demand.

Rumor is to the effect that an organization of members of the local trade may be formed in the near future. At the present time the rubber trade here is without an organization of any sort, and its members, with the exception of those who have been in the business many years, are not known to one another. Under existing conditions they have no means of meeting in a social way and learning what a fine fellow a competitor may be when he lays aside the weapons of business. Six or seven years ago an unsuccessful attempt was made by the rubber men of the city to form such an organization. Here is what one prominent rubber man has to say regarding the history of that effort:

"Everything went fine at the first meeting, which was held in the Palmer House, as I remember. Long speeches were made about co-operation in the rubber trade, and enthusiasm ran at a high pitch, as far as could be seen. More than two dozen members of the local trade were present at that meeting. Preliminary arrangements were made for organization, and every-

body present was taxed \$25. At the next meeting fewer were present, and less was said. Most of those who came were salesmen. The heads of the various concerns, who had shown a marked interest at the previous meeting, stayed away for some reason. Several meetings were held in all, but the attendance dwindled down until only a few came. After that no meeting was held, and it was admitted on all sides that the attempt at local organization of the rubber trade had failed. What became of the \$25 contributions I never learned. I did not get mine back. I hope the money was devoted to some good cause."

Such is the story of past attempts to organize. The spirit of today, however, is different even from that of six or seven years ago, and the rubber men to whom the writer talked seem aware that they are behind the times in having no local organization.

* * *

The Rubber Products Co. has incorporated for \$10,000, and will engage in the manufacture of a general line of specialties containing rubber as a major part of the composition. While the incorporation papers have just been returned from the state capital, word has been received to the effect that manufacture will begin at once under the charter. The incorporators are Harry Okin, J. S. McClellan and Louis W. McIntyre, all men of experience in the rubber business.

* * *

John Mills, manager of the New York Belting & Packing Co., 139 West Lake street, said to your correspondent: "We have been shipping much hose and much belting to the grain elevators. The mines have also ordered much packing. One of the most troublesome of the local conditions has been a strike of the brick-makers during the past month, which has thrown 25,000 men out of work, and affects thousands more in other lines of business. This has meant a perceptible slowing down in many branches of endeavor. Building operations are now practically at a standstill, and there is no immediate prospect of a settlement. This has had a marked effect on the local sale of belting, which has been felt, I believe, by all of us."

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent

BECAUSE of the close relations of the suspended Atlantic National Bank, of this city, the Consumers' Rubber Co., of Bristol, and the Walpole Tire & Rubber Co., of Walpole, Massachusetts, anything which affects one, no matter how indirectly, has an interest for all. Consequently the result of the sale of the Walpole Tire & Rubber Co.'s plant at Walpole, which was advertised for Monday, May 11, was watched with considerable interest here. Only one bid was received—that made by Colonel Metzler, of Boston, representing the stockholders' committee. This was for \$800,000, but as the upset price had been fixed previously by the court at \$1,150,000, this offer was not accepted, and the matter will again come before the court on June 1.

Among the Providence people present at the sale were Michael J. Houlihan, vice-president of the Walpole company; Ernest W. Tinkham, former president of the company and chairman of the board of directors of the Atlantic National Bank, and R. C. Curtis, receiver of the Atlantic National Bank.

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Robert W. Emerson, of the local law firm of Mumford, Huddy & Emerson, who is receiver for the Consumer's Rubber Co., of Bristol, has not yet succeeded in disposing of the plant, which has been continued under operation on certain lines of goods easily disposed of. He has several times granted options, none of which, however, have resulted in final purchase.

* * *

Harlow Waite, general manager of the Revere Rubber Co., of

this city, is still in charge of the plant on Valley street, a new superintendent not having yet been selected.

Arthur Homer Carr, superintendent of the rubber thread department of the Revere company, was married recently at Grace Church, New York, to Miss Ethel Howard Tuttle, of Providence. Mr. and Mrs. Carr sailed the following day on the "Mauretania" for a two months' trip abroad, during which they will visit London and Paris, as well as Italy, Germany, Austria and Russia.

* * *

The local branch of the B. F. Goodrich Co. has been removed from its former cramped quarters in Weybosset street to the new building facing Broadway, at the junction of Jackson and Cope streets. The first floor is to be used as office, shipping department and salesroom. The basement is designed to be used entirely for storage of solid tires for motor vehicles, and there is also a shop in the front end of the basement equipped with a hydraulic press and other apparatus for applying Goodrich wire-less solid truck tires. The second and third floors will be used for the stocking of pneumatic tires. The building is triangular in shape, three stories high, of brick construction, and was erected specially for occupancy by the Goodrich company.

* * *

The joint standing committee on fire department of the City Council of Woonsocket has awarded a contract for 1,000 feet of fire hose to the United & Globe Rubber Manufacturing Cos., of Trenton, New Jersey, which bid 60 cents per foot.

The contract to furnish the fire department of Fall River with 2,500 feet of 2½ and 3-inch hose has been awarded by the board of fire commissioners to the same concern, which was the lowest of seven bidders. The prices bid were 60 and 74 cents per foot respectively.

A branch of the Alling Rubber Co. was opened on Monday, May 4, on High street, Westerly, with a complete line of everything in rubber.

* * *

A new bed plate for the engine at the factory of the National India Rubber Co., Bristol, was installed early in the month, a force working from Saturday shut-down at noon until Monday morning in order that there need be no cessation of work among the employees of the factory, as the shoe making departments are rushed with orders at present.

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The insulated wire factory of the Bourn Rubber Co., in the rear of 12 Constitution street, was entirely destroyed by fire May 19, entailing a loss estimated at \$25,000, which is fully covered by insurance. The blaze started in some coal dust in the boiler-room and spread rapidly. Nearly a hundred persons were at work in the building at the time, and considerable confusion prevailed in the efforts of the employees to make a hasty exit. One young woman jumped from a second story window to the street, and was badly cut and shaken, tho not seriously injured. One fireman was overcome by the dense smoke. Several dwellings surrounding the factory were more or less damaged. The building will probably be rebuilt at once.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

A NEW RUBBER FACTORY.

THE Delion Tire & Rubber Co.'s new factory at Trenton is rapidly nearing completion. This company owns three acres, located on the main line of the Pennsylvania railroad, with excellent switching facilities. The Trenton trolley runs in front of the factory, affording easy access to and from the city. The main building is 285 feet long and 75 feet wide, with two stories, containing a total of 42,750 square feet of floor space. The construction is of a modern substantial factory type, which is necessary to support the heavy rubber machinery. The building is of red brick, with large windows, which admit the maximum amount of daylight. Unobstructed floor space and convenient elevators are provided to assist in efficient plant management. The Birmingham Iron Foundry, of Derby, Connecticut, is installing the washers, mixers, calenders and heaters. The molds and patterns are of the wrapped tread one-cure system, manufactured by the John E. Thropp's Sons Co., of Trenton. The machinery and plant of this model factory are intended to make it the most complete and up-to-date mill of its size in the East. Its product will consist of non-skid and plain tread tires, with a capacity of 400 tires and 600 tubes a day. The officers are as follows: O. E. Condit, president; W. W. Thomas,

vice-president; H. H. Coleman, secretary and treasurer; Lionel Emdin, sales manager. The directors are: O. E. Condit, W. W. Thomas, Wm. T. Rock, Chas. R. Whitehead, L. B. Tompkins, F. G. Hasselman, Lionel Emdin, Wm. R. Brown and H. H. Coleman.

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PLANT OF DELION TIRE & RUBBER CO.

So great has been the interest in the

recently closed up-keep contest between chauffeurs operating cars equipped with Ajax tires that the Ajax-Grieb Rubber Co. has offered prizes in another similar competition on tires purchased any time after April 1 of this year—the contest to close on March 31 next. The rules governing this competition are the same as those mentioned in the May number of THE INDIA RUBBER WORLD, page 428, in connection with the one just closed, and prizes to the amount of \$5,000 are again offered—a first prize of \$500, a second of \$300, three of \$200, and 205 other prizes in amounts of \$100, \$50, \$25, \$20 and \$10. The competition is for employed chauffeurs only, tho the benefits extend beyond the chauffeur to the owner of the car, through the endeavors of the former to get the maximum service from his tires, and the greater care and attention he is likely therefore to give them. The record for the previous contest was 16,783 miles, and the average for the 208 winning tires was 6,906 miles.

This company was obliged recently to suspend operations for a few days, the first time since starting in business, in order to replace certain machinery which had given out from constant service. Between 200 and 300 persons suffered enforced idleness for about a week as a result of the accident.

Factory additions and the installation of new machinery are contemplated by the Empire Rubber & Tire Co., of this city, the present plant, equipped for the manufacture of automobile tires and rubber specialties, and operating night and day with a

force of 500 employes and a daily output of 900 automobile tires, being inadequate to take care of the demand.

William Burkhardt, for the past 30 years in the employ of the John A. Roebling's Sons Co., as foreman of the steam fitting department, died at his home at 24 Hewitt street, this city, on May 5, from a complication of diseases. He was in the sixtieth year of his age, a member of the Working Men's Sick and Beneficial Society of the John A. Roebling's Sons Co. and of a number of lodges and German singing societies.

* * *

Garden hose used to stop the progress of the flames until the arrival of firemen was quite effective recently when a barn at Lambertville caught fire, and was the means of saving it from complete destruction.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent.

PREDICTIONS are made that an unusually large number of tires will be sold in California this season to meet the demand of tourists, one large San Francisco dealer stating that his sales in a recent week to owners of cars who are contemplating long trips into the country were more than double those of a year ago. The condition of the roads in the state is favorable to such trips.

* * *

A new service station has been completed and opened by the San Francisco branch of the Fisk Rubber Co., in connection with its sales department. When this branch moved into its present quarters on Van Ness avenue early in 1913 a service station was installed which was felt to be adequate to meet the demands anticipated. The contrary proved to be the case, however, and it was found necessary to secure extra accommodations in the adjoining property and to considerably increase the size and capacity of this station.

An agent of the company gives some valuable advice to prospective purchasers of tires in the matter of supplying correct specifications when ordering. He states that if the particular style or type is mentioned much delay and annoyance could be avoided, going on to say that: "Regular clincher tires have stretchable beads and are designed for use on regular clincher (one-piece) rims; altho they are sometimes used on quick detachable clincher rims. When used on regular clincher rims, it is ruable for sizes including the four-inch and above to use chips and staybolts.

"If regular clincher tires are used on quick detachable clincher rims, it is necessary to use flaps with them to protect the inner tubes. Quick detachable clincher cases have non-stretchable beads and can only be used on quick detachable rims having removable clincher side rings. This style should always be equipped with flaps.

"The quick detachable cable-base tires, otherwise known as straight-side or straight-bead, have non-stretchable cables imbedded in the base and are designed for quick detachable rims. This style should be equipped with flaps."

* * *

A new company has been formed in San Francisco, under the name of Schmid-Jeffress Co., for the retail distribution of tires. The firm, which is composed of E. F. Jeffress, formerly manager in northern California for the W. D. Newerf Rubber Co., and Chris Schmid, has secured desirable quarters on Van Ness avenue.

* * *

The policy of the Goodyear Tire & Rubber Co. in separating its wholesale and retail departments has led to the discontinuance of the elaborately fitted up Van Ness avenue headquarters and to the establishment of a stock warehouse in the downtown district. Two representatives of the company, A. F. Osterloh, assistant secretary and head of the sales organization, and H. B. Hamlen, in charge of the credit and accounts department, have made quite

an extended visit to the coast, outlining the company's policy and going over matters generally with their various branch managers. The San Francisco branch, of which Frank Carroll is manager, is to remain headquarters and central distributing point for the Pacific Coast, and a much larger and more varied stock of tires and accessories will be carried than ever before.

This company's Los Angeles branch, under the management of E. Lingenfelder, has moved to Twelfth and Olive streets, where they have taken the entire three-story and basement building formerly occupied by the Maxwell company. In the new quarters the truck tire department is in the basement, an electric elevator being provided to convey the trucks to this department to have tires fitted.

* * *

There is a prospect that San Francisco will soon have a gum factory, a representative of the American Chicle Co. having recently been looking over sites in this city for such an industry. Should it be established, the expectation is to invest \$200,000 in the enterprise, which is to give employment to about 300 persons.

* * *

The W. D. Newerf Rubber Co. has opened its new branch at Pico and Hope streets, Los Angeles, with Walter Sahland as manager.

* * *

A shipment of machinery recently arrived for installation at the plant of the Panama Rubber Co. at Compton included a hydraulic ram and pot heater weighing fifteen tons. The installation of machinery for this plant, now nearing completion, has been in charge of E. E. Harding, a mechanical engineer.

* * *

The Spokane branch of the United States Tire Co. has had added to its territory five counties formerly belonging to the house at Butte, Montana. "Nobby Treads" are making a steady advance in popularity, and being equally adapted for summer and winter service, they have been adopted for exclusive use by one of the San Francisco taxicab companies on their taxis and touring cars, a service which is probably harder on cars and tires than any other in which they are ever engaged.

* * *

A new type of inner tube is now on the market, made by The Savage Tire Co., of San Diego, and known as the "Red-Grafite." This tube is made of red gum and is so constructed that both the splice and the valve-base—which is different from that of the ordinary type—are guaranteed for the life of the tube. Its walls are thick— $\frac{1}{8}$ of an inch in a 34 x 4 inch tube—and fine graphite is applied in such a manner that it will not flake off with use, giving the tube a permanent graphite surface and thus eliminating the internal heat caused by chafing and sticking in the casing, as well as reducing the danger of pinching.

* * *

The B. F. Goodrich Co., of Akron, has established a new branch at San Diego, of which A. J. Straney, for some time connected with the Los Angeles agency, is manager.

* * *

Negotiations are in progress for the building of a plant at Colfax, California, for the manufacture of fireproof material from asbestos obtained in the Iowa Hill mines of that section, where there is a large deposit of asbestos reported on by experts as being of superior quality.

* * *

The Norman Peart Tire Co., of Oakland, distributors of Ajax tires in that section and one of the oldest established tire vulcanizing and retreading concerns on the coast, has moved to larger quarters at 1776 Broadway, where a stock of motor supplies will also be carried.

* * *

The Seattle branch of the Goodyear Tire & Rubber Co. has moved from its former location at Broadway and Pine street to the two-story building at 814-816 East Pike street.

A Distinguished Rubber Chemist.

IN the manipulation of rubber, and in the manufacture of rubber goods, chemistry plays an important part. Prominent in this work is Stephen P. Sharples, of Boston, whose researches and investigations have been of great value in the reclaimed rubber industry.

This well-known chemist was born in 1842 in West Chester, Pennsylvania, where his Quaker paternal ancestor bought land of William Penn in 1682. His mother's ancestors were Welsh, who settled in Philadelphia previous to 1700.

Stephen Paschall, his great-grandfather, was one of the first chemists in America and built one of the earliest steel furnaces in Philadelphia. He was the first to make a platform scale in that city.

Stephen Paschall Sharples inherited from this ancestor that love of study, experiment and investigation which has determined his career and made him so successful in his profession. Mr. Sharples' education included the common school of the winter months and later a course in the West Chester Normal School. A term as teacher was followed by two years in a machine shop and a year in the Agricultural College of Pennsylvania. Every summer he worked in the fields, running mowing or reaping machines, with which he had become familiar during his machine shop experience.

He then entered the Lawrence Scientific School of Harvard University, specializing in chemistry, graduating in 1866 with the highest degree granted by that school. He continued his studies in Cambridge as a resident graduate until the winter of 1867, then going as teacher in a private school in West Chester, thence to Lehigh University, where he spent a year teaching chemistry, and in his leisure time watching the manufacture of zinc and iron at the works at Bethlehem. Then for three years he occupied the position of assistant to Dr. Gibbs, his professor at the Lawrence Scientific School, from which position he was called to become assistant editor of the "Journal of Chemistry," adding to this editorial work considerable practical chemical investigation. He continued in this editorial position until the great fire in Boston in 1872, after which he embarked in business on his own account as an analytical and consulting chemist.

While with the "Journal of Chemistry" he was called as an expert in two important suits in patent litigation, one on nickel plating and the other on canning green corn, with the result that both these processes became public property.

For eighteen years he was a professor of chemistry in the Boston Dental College, and during most of this time was State Assayer of Ore and Metals, and Assayer and Inspector of Liquors for the Commonwealth of Massachusetts. While in the latter capacity he was instrumental in placing upon the statute books two laws, one defining as an intoxicating liquor any beverage containing over one per cent. of alcohol, and the other limiting the number of licenses to one to each 1,000 inhabitants in

any town, and one to each 500 in the city of Boston. This law cut the number of licensed liquor sellers in that city from 2,500 to about 800.

In 1880, in co-operation with the late N. C. Mitchell, Mr. Sharples devoted much time and study to the reclaiming of waste rubber. Today there is not a factory in the country using the acid reclaiming process which does not use some of the processes devised or put in operation at the Mitchell establishment in Philadelphia.

He was the first to propose the separation of iron from the scrap by a magnetic machine. He assisted in devising a process for separating sand and brass from the rubber. At one time he made an investigation, extending over many months, on the best methods of coagulating *Castilloa* latex, the results of which, as well as of much other work, have never been published, as they were made for his many clients as a chemist.

This work in the rubber field gave him a practical knowledge of the processes, so that when, in 1890, suits were brought against infringers of the patents he became the principal expert witness. The suits were not successful, the judge deciding that altho there was no doubt of the invention, the patents, however, were too loosely described to hold the defendants as infringers.

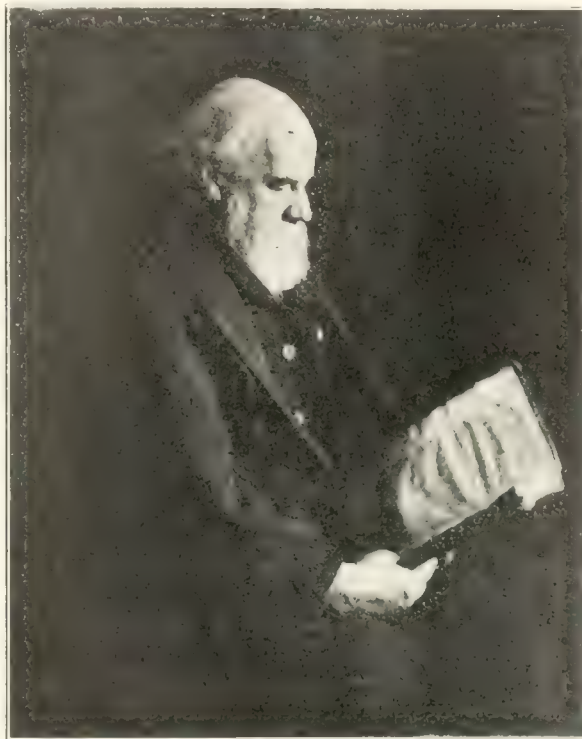
Another important legal case was that in which Professor Sharples was the first to employ photography to prove changes in a legal document, a method of detection which has since played

an important part in many cases, both civil and criminal.

The Professor has traveled extensively, investigating mining property, and has visited nearly every State in the Union. When the phosphate industry was established in Florida, he spent much time there investigating the deposits of phosphate rock, and later did similar work in South Carolina.

But if chemistry is his vocation, he certainly has his avocation. He is deeply interested in genealogy, and was at one time editor of the "Genealogical Magazine." He was joint editor of "The History of the Kimball Family" and editor of "The Records of the Church of Christ in New England." His chemical and scientific books and articles comprise a long list, as do also the societies of which he is a member.

Enough has been said to show the breadth of his studies and the scope of his abilities. Altho beyond the biblical limit of three-score years and ten, he is still active, present at his laboratory on Broad street, Boston, every working day, analyzing, studying and experimenting with all the ardor of men of half his age and one-tenth his experience. He is a member of the Rubber Club of America and rarely misses a meeting or an outing of that body, among whose members are many who, besides having benefited by his researches, deeply appreciate him as a personal friend, and hold him in the profoundest respect for his notable scientific achievements.



PROF. STEPHEN P. SHARPLES

News of the American Rubber Trade.

MONATIQUOT RUBBER WORKS COMPANY

THE Monatiquot Rubber Works Co., of South Braintree, Massachusetts, completed the fourth year of their operations last April. Their products are known as "Naturized Rubbers," the most prominent of which is their "Squantum" brand, named like their other stocks after a famous Indian chief. They lately introduced their "Wampatuck" brand, and this stock has also become well known.

The company makes few stocks rather than many on the theory that such a program prevents confusion and promotes specialization.

The plant is located at South Braintree, about 12 miles from Boston. The buildings are of brick, and the equipment is of the latest type. The plant is made up of three separate manufacturing units, so that the danger from fire is minimized to a great extent. The Monatiquot river, from which the company takes its name, furnishes a soft, pure water, which is an invaluable asset in the processes employed.

Robert C. Harlow, for many years superintendent of the reclaiming plant of the Boston Woven Hose & Rubber Co., is president and general factory manager, while the treasurer, James H. Stedman, is equally well known in the rubber trade. The company maintains sales offices at 176 Federal street, Boston, as well as representations at Akron, Ohio, and Brussels, Belgium.

THE PORTAGE RUBBER COMPANY.

It is authoritatively stated that the profits of the Portage Rubber Co. for the last quarter were more than sufficient to pay the yearly dividend of 7 per cent. on their preferred stock and that there is quite a strong probability that the company will begin dividends on the common stock this year.

FRIGHTFUL DISASTER IN A DETROIT RUBBER COMPANY

A frightful and fatal disaster occurred on May 15 in the plant of the Mexican Crude Rubber Co., situated on the west side of Detroit, Michigan. An explosion took place in the mixing room, which utterly destroyed that part of the company's works, killed outright ten of the twenty-five workmen employed in that department and injured several others so badly that three more died soon after being removed to the hospital.

The building was a new structure put up about a year ago, of steel and concrete, and one story in height. The concrete walls at this part of the factory were entirely blown out, and in great fragments—some of them weighing several pounds—were scattered over a territory of many blocks, doing considerable damage to adjacent buildings.

Just how the accident occurred will probably never be known, altho the matter is being thoroughly investigated. Some of the surviving workmen say that there was a large vat of molten rubber in the center of the room, but the general manager of the company says it is quite possible that the heat of the sun may have caused an explosion of mixed ether and alcohol. This chemical is contained in iron barrels which are kept sealed when not in use.

The illustration shown below, made from a photograph taken shortly after the explosion especially for this paper, shows the completeness of the ruin, the only part of the wall left standing being the steel frame.

The Mexican Crude Rubber Co. was incorporated eight years ago with a capital of \$1,500,000, and a plant erected at Coahuila, Mexico, which later was moved to San Luis Potosi, but owing to the serious interruption of its work by the Mexican war it was moved to Detroit about a year ago. It is engaged in the manufacture of artificial leather by a secret process.



PLANT OF THE MEXICAN CRUDE RUBBER CO. AFTER THE EXPLOSION.

PERSONAL MENTION.

Mr. George B. Hodgman, president of the Hodgman Rubber Co. and also president of the Rubber Club of America, was recently elected a member of the committee on arbitration of the Chamber of Commerce of the State of New York.

Mr. Eugene Hofeller, secretary and treasurer of Theodore Hofeller & Co., well-known scrap rubber and waste material dealers of Buffalo, and Mr. Finnigan, of the Empire Smelting Co., of Depew, New York, have purchased the plant and equipment of the New Columbus Buggy Co., at Columbus, Ohio, and will engage in the manufacture of a full line of electric and gasoline automobiles as well as high grade buggies. Mr. Hofeller will devote only a small part of his time to the new business, continuing his interest in and association with the Hofeller company.

Mr. Hermann Reimers, for many years known by the whole of the American rubber trade as the head of Reimers & Co., New York, but now a partner in the important rubber importing house of Heilbut, Symons & Co., of London, was a visitor to the United States this spring. His tarry was so brief that few of his many friends had an opportunity to see him, much to their regret.

J. A. Mendes, of Pará, the inventor of the Mendes process for smoking Pará rubber, is in New York.

Charles B. Whittlesey, secretary of the Hartford Rubber Works Co., of Hartford, Connecticut, and president of the Hartford Board of Trade, was married about the first of May, at New Britain, to Miss Grace A. Moore.

Mr. Philip Cabot, of White, Weld & Co., of Boston, has been elected a director of the Hood Rubber Co.

H. E. Raymond, second vice-president and sales manager of The B. F. Goodrich Co., has moved his offices from the factory at Akron to New York City, where the president of the company, B. G. Work, has for some time been located. The general direction of all affairs at the plant at Akron is in charge of A. H. Marks, vice-president and manufacturing manager of the concern.

Mr. B. F. Goodsell, the original inventor of Goodsell packings, has, in association with a few other men, incorporated the Goodsell Packing Co., with offices at 31 West Lake street, Chicago. Mr. Goodsell assumes the presidency and management of this new company.

H. C. Ross, formerly Pacific Coast manager for the Knight Tire & Rubber Co., of Canton, Ohio, has been promoted to the position of general sales manager, with headquarters at Canton, to fill the vacancy created by the recent resignation of Ole Hibner, former general sales manager.

P. P. Parker, who in January of this year was appointed eastern district manager of the same company, in charge of its Boston branch, is now assistant sales manager, with headquarters at the factory in Canton. Mr. Parker's experience in charge of the Boston branch especially fits him for his new work of overseeing the company's various United States distributing houses.

Edgar Storms, Jr., who for some time past has been manager of the New York branch of the Ajax-Grieb Rubber Co., of Trenton, has resigned his position with that company, to become president and general manager of the Racine Rubber Tire Co. of New York, Inc., located at Seventh avenue and Fifty-fourth street.

Henry E. Jacoby, of New York, announces the removal on May 1 of his offices to larger quarters at 95 to 97 Liberty street, where he will continue to specialize on chemical machinery and equipment of all kinds, including a much larger line of vacuum drying apparatus.

City branch of the Gibney Tire & Rubber Co., of Conshohocken, Pennsylvania, will in future look after this company's interests among the big truck users and manufacturers, while F. F. Phillips has been appointed to the New York management.

George J. Bates, formerly credit man for a number of years with another large Akron tire company, and for the past year head of the Firestone Tire & Rubber Co.'s pneumatic tire sales department at Akron, is now looking after the company's interests in this particular line among the automobile factories throughout Michigan, with headquarters at the Detroit branch, corner Canfield and Woodward avenues.

MR. WATSON VICE-PRESIDENT OF THE LEE TIRE & RUBBER CO.

Mr. John J. Watson, Jr., well known to the rubber trade because of his former connection with the United States Rubber Co.—of which corporation he was the treasurer for several years—has, together with several other eastern capitalists, become interested in the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania. At the meeting of the company held on May 4 he was elected first vice-president. The board of directors elected at that time include: J. Ellwood Lee, A. A. Garthwaite, John J. Watson, Samuel Wright, H. C. Coleman, M. O'B. Halliwell, Charles Heber Clark, J. Carl De la Cour, H. C. Jones and John M. Dettra. One of the local papers, referring to the advent into the management of the company of this new element, speaks as follows: "In securing Mr. Watson and his associated interests the company has made a great business stroke which will bring it into a stronger and larger position in the rubber manufacturing world. Mr. Watson is a young, active business man of great experience in big enterprises and is one of the best-known men in the rubber trade. The acquisition of Mr. Watson and his associates will bring great strength to the company, which is now doing a very large business and has many orders on hand."

MR. GEORGE B. WILSON.

Mr. George B. Wilson, president and general manager of the Racine Rubber Co., of Racine, Wisconsin—formerly the Kelly-Racine Rubber Co.—has recently been visiting some of his friends in the East. Mr. Wilson assumed his present position with the Racine company a year and a half ago and the prosperous condition of the company today shows the result of his executive ability. Mr. Wilson originated in the East, having lived as a boy in Dedham, Massachusetts, and getting his preliminary education at the Boston Latin School, finishing up at Harvard; whither he goes later in this month to attend the twentieth anniversary of his graduation. For a number of years he was connected with the mining industry in Nevada and Arizona, but about four or five years ago, he went to Racine and became president of the Mitchell-Lewis Motor Co., a position from which he was promoted to the one he now occupies.

A YOUNG BRAZILIAN IN NEW YORK.

A young Brazilian—son of one of the most eminent officials in Pará—has recently come to New York with the hope of associating himself with some commercial concern, preferably with some rubber company. He is a good deal of a linguist, speaking English, Spanish, Portuguese, French, Italian and German—which would seem to qualify him very well to act as foreign secretary handling the foreign correspondence of some importing or exporting house. He is quite willing, if such a position should offer, to return to South America as representative for some American company. In fact he is willing to do any work where his qualifications will make him particularly useful. He is well educated, has had some experience in banking and commercial affairs, has traveled extensively, is well vouched for both in New York and in Pará, and ought to fit into some American commercial organization. This office will be very glad to furnish his address.

John L. Gibson, who has been in charge of the New York

THE U. S. TIRE CO. ESTABLISHES NEW AGENCIES.

Through John B. Tower, head of the export department, who has recently returned from an extended trip to Jamaica, Panama, Porto Rico and other southern points, the United States Tire Co. has established new agencies at Kingston (Jamaica) and Panama. Henrique Bros., owners of the Industrial Garage, were appointed agents in the former city, and Smallwood Bros., proprietors of the Pan-American Automobile & Supply Co., received a similar appointment in Panama. Mr. Tower reports excellent business in every district he visited, the distributors of tires in those sections being steady, consistent and enthusiastic advertisers. He states that in Kingston, where the smaller and lighter weight cars predominate, as well as in Panama and Porto Rico, where the larger and heavier styles are preferred and where anti-skids are used almost entirely, the "Nobby Tread" has become extremely popular. This company is represented in Porto Rico by the firm of Pietrantoni & Sojo, whose headquarters are at San Juan and who have sub-agencies at Ponce, Guayama, Mayaguez, Arecibo, Aguadilla, San Sebastian and Humacao.

ADDITIONS TO THE VICTOR-BALATA PLANT AT EASTON.

The Victor-Balata & Textile Belting Co., manufacturers of Victor-Balata, Canvas Stitched, Keystone Hair and other beltings—whose office and salesrooms are at 51 Beekman street, New York—has recently completed an addition to its plant at Easton, Pennsylvania, increasing by one-half the area occupied. This new addition, like the other buildings, is of steel and concrete; the machinery is of special design and most modern and heavy construction, and the lighting and heating arrangements, as well as all appliances and appurtenances, are of the highest character. Victor-Balata was formerly imported into this country through American agents, but the added costs and the delays thereby entailed were such as to lead to the erection of the present extensive plant.

CHANGES IN TIRE PRICES.

Following the general reduction in tire prices not long ago prophecies were made of an increase being necessitated when the demand for tires for summer travel should really set in. While this prophecy has not yet been fulfilled, some price changes are taking place, the first to be noted being an increase of about 2 per cent. on two sizes of tires made by the Fisk Rubber Co., and the second a reduction of about 5 per cent. in the price of the Goodyear Tire & Rubber Co.'s individual block motor truck tires, bringing the price of this type of tire down to the same figure at which the endless variety may be purchased. The Goodyear company explains this reduction in price by the statement that the enlarged volume of production necessitated by the constantly increasing demand for this particular type of tire has lowered the cost to an extent sufficient to warrant the decrease in selling price.

KELLY-SPRINGFIELD REFINANCING PLAN ADOPTED.

The special meeting of the stockholders of the Kelly-Springfield Tire Co. of May 4 resulted in the adoption of a refinancing plan. This plan calls for an increase of the capital stock of the company from \$5,149,500 to double that amount, or \$10,299,000. The former capital stock was divided between: 4 per cent. income debenture bonds due April 1, 1915, amounting to \$2,850,500; 6 per cent. cumulative preferred stock—upon which arrears of dividends amount to 78½ per cent.—to the amount of \$1,149,500, and common stock to the value of \$4,000,000. By the new arrangement the capital stock is divided between: 6 per cent. cumulative preferred stock amounting to \$4,239,200; 7 per cent. cumulative second preferred stock to the amount of \$1,029,900 (which represents the 78½ per cent. back dividends), and common stock to the value of \$5,029,900. The following directors were re-elected: Van A. Cartmell, F. A. Seaman, Austin Poole, Stephen Peabody, Gustave Maas, A. J. Scheuer and J. Oppenheim.

TRADE NEWS NOTES.

A new concern—the Franco-American Rubber Co.—has been incorporated in Delaware, with a capital stock of \$5,000,000 to engage in the manufacture of machinery and processes for extracting rubber from trees and vines and purifying and cleansing the extracted product. The incorporators are F. D. Buck, George W. Dillman and M. L. Harty, all of Wilmington.

Gutta Percha & Rubber, Limited, whose factories and principal offices are located in Toronto, Ontario, intend very soon to erect a warehouse building at Regina, Saskatchewan, and to establish a permanent branch in that city, where a small stock is now carried. A plot of ground on Broad street has been purchased for this purpose and the proposed warehouse will be three or four stories high and cost in the neighborhood of \$30,000. This company already has branches at Halifax, Montreal, Winnipeg, Calgary and Vancouver, Canada, and at Sydney and Melbourne, Australia.

The Kingston Rubber Brush Co. has removed from its former location at Kingston, New York, to 6102 Market street, Philadelphia.

The Buffalo Foundry & Machine Co., of Buffalo, New York, announce the termination of the arrangement whereby H. E. Jacoby has been representing them in New York City and vicinity. They are now handling direct all inquiries covering vacuum apparatus, castings, patterns and machine work.

The partnership of Eggers Bros. & Pounds, crude rubber importers, 16 Exchange place, New York, has been dissolved and the business formerly conducted by Alfred and Ludwig Eggers and W. S. Pounds under that partnership has been transferred to Dunbar & Co., of 290 Broadway, incorporated April 25 with an authorized capital stock of \$200,000 to deal in crude rubber and allied products.

A complete line of Dreadnaught tires and tubes—including an anti-skid cover and a patented vacuum tread—has been placed on the market by the Dreadnaught Tire & Rubber Co. from its factory at Baltimore which has been under construction for the past year and is now in full operation. This factory, which is under the management of Walter Dunbar, is within easy distance of the water front and enjoys excellent shipping facilities. Agencies for this tire are said to have already been established in a number of the larger cities.

At a meeting of the board of directors of the McGraw Tire & Rubber Co., held on May 1, action was taken to provide for the increase of the capital stock of the company from \$1,000,000 to \$1,500,000. F. B. Squire has been elected to the board of directors, to succeed R. F. Taggart, retired. President E. C. McGraw estimates that the 1914 business of the company will amount to between \$4,000,000 and \$5,000,000, the plant now being in operation day and night with a force of 600 at work.

A residence at Henshaw Park—a suburb of Worcester, Massachusetts—now being erected for J. E. Girouard of that place, is to have an entire asbestos roof.

Work was begun about the middle of May installing machinery in the factory of the C. H. Stoddard Rubber Tire Co., on Howe avenue, Millbury, Massachusetts, and it is expected that operations will commence in the new building soon after June 1.

RUBBER COMPANY DIVIDEND.

The Boston Woven Hose & Rubber Co. has declared a regular quarterly dividend of 3 per cent. on its common stock and a regular semi-annual dividend of 3 per cent. on its preferred stock—payable June 15 to stockholders of record on June 10.

The Plymouth Rubber Co. has declared a regular quarterly dividend of 1¼ per cent. on its preferred stock, payable June 1.

AUTOMOBILE CLUBS AS RUBBER RETAILERS.

A catalog recently issued by one of the leading automobile clubs, shows almost a full line of automobile supplies. It contains nearly all the rubber goods used by the motorists. Over one hundred and fifty different rubber articles are listed.

No tires are shown or quoted, but there are several types of tire gages, pumps and covers. There are four kinds of brake lining; several rubber pedal grips and rubber mats; rubber seat and top covers; lamp covers and window cleaners; gas bags for lamps, rubber lamp connections; braided tubing and red rubber tubing, and horns and bulbs of all sorts. There are shown gasoline tubing, pump tubings, radiator hose, channel and dash rubber; spring rubber bumpers, washers and rubber packing in variety.

The ignition and lighting systems are provided for with lighting cables of all kinds; lamp cord and dual lamp cord; three kinds of armored cable; half a dozen kinds of braided cable and four kinds of imported rubber cable; high tension magnetos, high tension secondary and ignition cables, and two and four-strand low tension primary cables.

To provide for blow-outs there are various tire fillers, rubber cements, patches and tire bands; and for inner tubes there are blow-out patches and testing tanks. For more serious blow-outs on the road, there are complete vulcanizing outfits for repairing casings and inner tubes. These outfits include three types of portable electric vulcanizers and four portable steam vulcanizers. Several types of garage steam vulcanizers and garage electric vulcanizers are shown. Paints of pure rubber for tires and rubber mats are recommended. To prevent skidding seven types of chains are listed; also studded grips for treads and grips for solid tires. Rubber sleeves and rubber aprons for the hostler are also catalogued. For the motorist there are rubber goggles and goggles with rubber covered temples; rain coats of double texture, auto rubber shirts, and linen dusters.

RECORD AUTO SHIPMENTS FOR MARCH.

Figures compiled by the Detroit freight and traffic office of the National Automobile Chamber of Commerce, Inc., show that during the month of March shipments of automobiles in the western district included more than 60,000 cars, for which 13,510 freight cars were required. Alfred Reeves, general manager of the N. A. C. C., has recently returned from a visit to 41 of the automobile plants in Ohio, Michigan, Indiana and New York, and his report indicates that the companies are apparently all in excellent condition, with production far behind the demand. He states that while the extraordinary demand for moderate priced cars continues, there is a sustained and increasing demand for higher priced machines, and that in Detroit alone there are now 114 factories producing automobiles or parts, of which 35 are making pleasure cars or trucks complete.

THE NATIONAL MANUFACTURERS IN CONVENTION.

At the Nineteenth Annual Convention of the National Association of Manufacturers, held on May 19 and 20 at the Waldorf-Astoria Hotel, New York, many topics of general interest were discussed. Resolutions were adopted favoring the recommendation of the association's Committee on Patents, which advocated the creation of a court of patent appeals and the erection of a new building for the Government Patent Office. Another resolution endorsed the bill now pending in the House of Representatives, known as "The Oldfield Design Registration Bill," to provide legal protection for the original designs for manufactured products. An interesting address was delivered during the convention by Manuel Gonzales Zeledon, Consul General for Costa Rica in New York, on "Central America as a Field for the American Manufacturer."

REVERE RUBBER CO. ANNUAL REPORT.

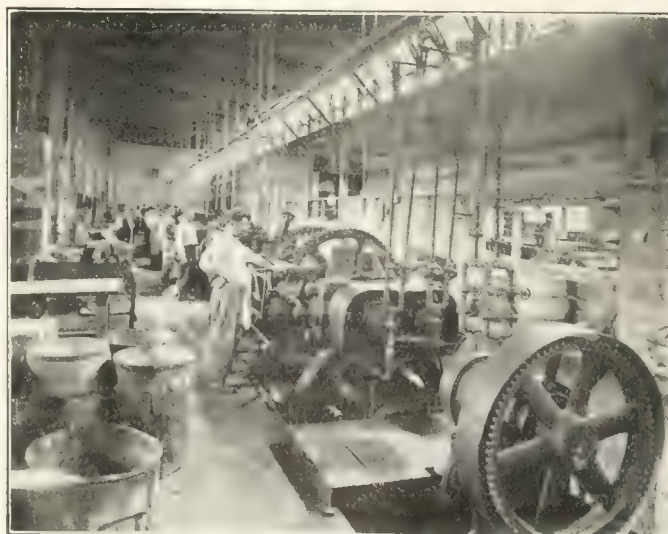
The report of the Revere Rubber Co., filed with the Secretary of State of Massachusetts, showed assets on December 31 last amounting to \$7,314,778, of which real estate and machinery represented a value of \$2,449,255, material—stock in process—\$2,730,531 and investments \$148,471, while cash and debts receivable are placed at \$1,867,827 and deferred accounts at \$118,693. The liabilities of the company, in addition to the capital stock of \$4,000,000, include accounts and bills payable to the amount of \$1,927,868, deferred and surplus accounts \$15,111 and a profit and loss surplus of \$1,371,798.

PLANT EXTENSION BY DAYTON RUBBER MANUFACTURING CO.

The Dayton Rubber Manufacturing Co., of Dayton, Ohio, whose increase in capitalization was mentioned in the April number of THE INDIA RUBBER WORLD, has in contemplation the erection of a new factory building 500 x 75 feet in area and three stories high. This company made its first tire for motor fire apparatus in August, 1911, and now its tires are said to be in use as a part of the motor fire, ambulance and patrol apparatus of more than 400 cities in the United States and Canada, the increasing demand necessitating the erection of this addition to the plant.

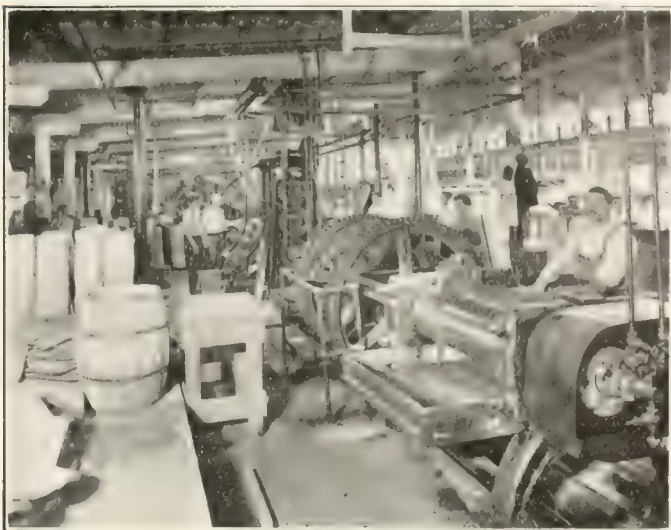
THE INSIDE OF A COMPREHENSIVE RUBBER MILL.

OUTSIDE views of rubber factories are often imposing because of the magnitude of some of these great American plants, but inside views are what really show the interesting phases of the industry. Here are seven interior views taken in different departments of the Pennsylvania Rubber Co. plant at Jeannette, Pennsylvania. These views—which are exceptionally sharp and distinct in detail for pictures of this size—not only give something of an idea of the work done in the different rooms of this big plant, but show the wide variety of manufacture carried on by this company. The first view shows the milling room—which is very much the same in all rubber plants—where the crude rubber is mixed with various compounds. The



VIEW ALONG MILL LINE.

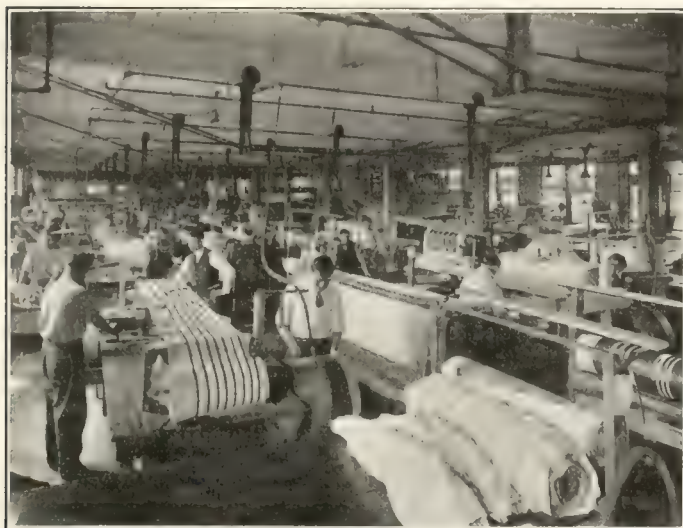
second view shows the calender room, which is also about the same in general character in all rubber factories. Number three shows a corner of the molding room, where the presses are at work on small molded goods. Four and five show the building up of bicycle and automobile tires, while six and seven give glimpses of the department devoted to the manufacture of tennis balls.



VIEW ALONG CALENDER LINE.



SHOWING PRESSES FOR SMALL MOLDED GOODS.



BICYCLE TIRE BUILDING ROOM.



AUTOMOBILE TIRE BUILDING ROOM.



CUTTING STOCK AND BUILDING CENTERS FOR HANDMADE CHAMPIONSHIP TENNIS BALLS.



PUNCHING OUT FELT COVERS AND SEWING HANDMADE CHAMPIONSHIP TENNIS BALLS.

MR. MACKINTOSH DINES HIS FRIENDS.

MR. W. M. MACKINTOSH, who has been in this country for the past year installing his process of waterproofing fabrics in some American plants which have adopted his system, sailed for his home in Scotland on May 26, and on the evening preceding his sailing he gave a dinner at the Park Avenue Hotel to about thirty of his social and business friends, including particularly those who have been associated with him in his work in this country.

It was an informal dinner and thoroughly enjoyable from every standpoint. Mr. John Lunn acted as president for the occasion and introduced a number of speakers who delivered happy, tho altogether impromptu, addresses of congratulation on what Mr. Mackintosh had accomplished and of good wishes for a pleasant voyage and his future generally. Among those who spoke were F. S. Bennett, F. D. Wynn, L. M. Himebaugh, M. W. Kempner and Mr. Gillespie. Mr. Mackintosh responded most felicitously. Among those present were the following:

Mr. and Mrs. John Lunn, Mr. and Mrs. M. W. Kempner, Mr. and Mrs. Jas. Brotherton, Mr. and Mrs. Pritchard, Mr. and Mrs. F. D. Wynn, Mr. and Mrs. L. M. Himebaugh, Mr. McQueen McIntosh and sister, Mr. W. B. McIntosh, Mr. and Mrs. Albert Berry, Mr. Berry, Jr., Mr. and Mrs. E. A. Hoey, Mr. C. E. Rowe, Mr. F. S. Bennett, Mr. and Mrs. Gillespie, Mr. T. B. Coughlin, Mr. Wm. A. Rowley, Mr. Wm. M. Morse, Mr. F. B. Dobbin.

NEW INCORPORATIONS.

Arco Rubber Co., April 25, 1914; under the laws of Maine; authorized capital, \$10,000. Incorporators: L. D. Apsley (president), Hudson, Massachusetts; William E. Tucker (treasurer), Chelsea, Massachusetts, and David W. Snow, Portland, Maine. To manufacture and deal in rubber goods of all kinds.

Ashley Wire Wheel & Rim Co., Inc., May 11, 1914; under the laws of New York; authorized capital, \$50,000. Incorporators: Frank Oberkirch and Robert W. Ashley—both of 47 West Thirty-fourth street—and Henry L. Stuart, Hotel Waldorf-Astoria—all in New York City.

Bigger Rubber Preservative Co., Inc., May 11, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators: A. Frank Bigger, Wm. J. Connors and Walter F. Hocheins—all of Buffalo, New York. To treat rubber by "Bigger process."

Clinton Raincoat Co., Inc., April 24, 1914; under the laws of New York; authorized capital, \$2,000. Incorporators: Harry Stern and Rose Stern—both of 949 Fox street—and Abr. Polacoff, 967 Kelly street—all in New York City. To manufacture rubber and waterproof clothing, etc.

Davies Tire & Supply Co., March 7, 1914; under the laws of Washington; authorized capital, \$10,000. Incorporators: Marcus C. Davies, Kate M. Davies and Guy L. Hicks. To deal in automobiles and automobile supplies. Principal place of business, Tacoma, Washington.

Doherty Rubber Works, Inc., Eugene, April 27, 1914; under the laws of New York; authorized capital, \$40,000. Incorporators: Philip A. Doherty, 594 Bedford avenue; Mary J. Doherty, 87 North Ninth street—both in Brooklyn, New York—and Clinton T. Roc, Eighteenth street, Whitestone, Queens, New York. To manufacture dental and stamp rubber.

Forbes Rubber Co., Inc., May 11, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators: Thomas P. C. Forbes, Jr., Geo. V. Sloat and Anna S. Sloat—all of Freeport, New York. Tires, rubber goods, etc.

Franco-American Rubber Cloth Co., Inc., May 11, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators:

Harry Goldstein, 601 East One Hundred and Thirty-eighth street; Sam Goldstein, 1690 Prospect Place, and Henry L. Sperling, 755 Beck street—all in New York City.

Franco-American Rubber Co., May 5, 1914; under the laws of Delaware; authorized capital, \$5,000,000. Incorporators: F. D. Buck, Geo. W. Dillman and M. L. Horthy—all of Wilmington, Delaware. To manufacture machinery and processes to extract rubber of certain shrubs, vines and barks and for the purification and cleansing of same.

Gotham Rubber Co., Inc., May 11, 1914; under the laws of New York; authorized capital, \$1,000. Incorporators: Chas. Meyers, Emile Dreyfus and Sadie Barfield—all of 62 William street, New York City. Rubber goods, etc.

Great Western Rubber Works, The, April 7, 1914; under the laws of Indiana; authorized capital, \$50,000 (\$10,000 preferred, \$40,000 common). Incorporators: Edgar P. Denison, Richmond, Indiana; Guy D. Doremus and Floyd C. Miller, Kalamazoo, Michigan; James C. Burdette, Chicago, Illinois, and Paul H. Doremus, South Bend, Indiana. To manufacture and reclaim rubber from old rubber known as "reclaimed rubber"; to manufacture rubber goods or rubber articles of all description from new and reclaimed rubber, etc.

H. U. H. Tire Co., April 23, 1914; under the laws of New Jersey; authorized capital, \$5,000. Incorporators: Samuel D. Holzman and Rosaline Holzman—both of 78 Court street—and Louis Umstaedter, 140 Ridgewood avenue—all in Newark, New Jersey. To manufacture, buy, sell, import and export, etc., all kinds of automobiles, automobile accessories, etc.

Improved Belting Co., Inc., The, May 6, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: John J. Lenahan, Jason N. Whitcomb and Henry W. Willis—all of Buffalo, New York. Belting, rubber goods, etc.

Minor Rubber Co., April 6, 1914; under the laws of New Jersey; authorized capital, \$12,000. Incorporators: Wilfred C. Minor, 42 State street, Albany, New York; Noyes E. Alling, Bridgeport, Connecticut, and Charles W. Humphreys, 841 Broad street, Newark, New Jersey. To carry on a wholesale and retail rubber goods and general merchandise business, etc.

Orawaupum Tire & Repair Co., Inc., May 1, 1914; under the laws of New York; authorized capital, \$1,000. Incorporators: Ronald J. Rennie, Purchase, New York; Nellie M. Gidley, White Plains, New York, and John J. Hayde, 469 East One Hundred and Eighty-fifth street, New York City.

Rubber Tire Accessories Co., Inc., May 2, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators: Owen Earhart, 28 West Sixty-third street; Thomas J. Nugent, World Building, and Samuel K. Ellenbogen, 30 Church street—all in New York City.

Semple Rubber Co., February 21, 1914; under the laws of New Jersey; authorized capital, \$125,000. Incorporators: Charles H. Semple, Trenton, New Jersey; Fillmore A. Drake and Robert H. La Porte—both of Philadelphia, Pennsylvania. To buy, sell, import and generally deal in rubber, tires, etc.

A. C. Squires Rubber Co., May 12, 1914; under the laws of New Jersey; authorized capital, \$150,000. Incorporators: Arthur C. Squires, Cecil S. Ackerson and Albert E. Sculthorp—all of Keyport, New Jersey. To manufacture, import, export, buy, sell and otherwise deal in crude rubber, rubber clothing, etc.

Venezuela Chiclé Corporation, April 25, 1914; under the laws of New York; authorized capital, \$50,000. Incorporators: Edward Maurer and Raphael Eskenazi—both of 80 Maiden Lane—and Julian A. Arroyo, 82 Wall street—all in New York City.

Weathersilk Sales Co., May 12, 1914; under the laws of New Jersey; authorized capital, \$100,000. Incorporators: Percy Carter Bell, Millburn; Hobart L. Benedict and Amelia J. Meyer, both of 109 Broad street, Elizabeth—all in New Jersey. To buy, sell, import and deal in waterproof coats, cloaks, etc.

New Rubber Goods in the Market.

A BALMACAAN RAINCOAT.

THE balmacaan style of coat, in all materials, is without doubt the most popular fad in wearing apparel at the present moment, and the manufacturers of waterproof garments have not been slow to take advantage of the opportunity this fad affords of bringing out a new style in waterproof coats. The coat shown in the illustration herewith is a balmacaan model, loose fitting, with extra deep arm-sleeve, convertible collar and slit pockets. It is made both in cravenette and mackintosh materials. [Hodgman Rubber Co., 806-808 Broadway, New York.]



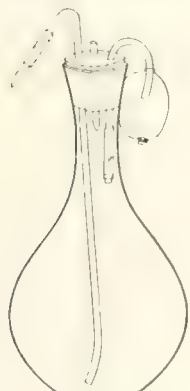
HODGMAN BAL-
MACAAN.

COMBINATION ICE BAG, WATER BOTTLE AND FOUNTAIN SYRINGE.

Economy of space is one of the desirable results attained in the design of a recently patented invention by which an ordinary wide-mouth rubber container with an internal-threaded collar secured to its edge may be utilized for any of the three purposes above mentioned. This variety of uses is effected by a combination plug comprising a body having a pair of flat faces from each of which extends a threaded shank. One of these shanks has a central bore which extends through the body and also through a nipple on the side of the body opposite the shank, this nipple being intended for the connection of an ordinary form of rubber hose—thus converting the bag into a fountain syringe. When not desired for this use, the plug may be unscrewed and the shank on the other side of it screwed into the same opening and the rubber hose removed. [Patent No. 1,079,203, November 18, 1913.]

LABORATORY WASH BOTTLE.

The accompanying sketch shows an inexpensive way in which a continuous flow laboratory wash bottle may be constructed, and by the use of which the old practice of placing a tube in the mouth in order to operate the wash bottle may be done away with. This apparatus calls for the use of a three-hole rubber stopper, a slit rubber tube and a rubber bulb, as well as a glass rod and glass tubing, in the arrangement suggested by the drawing. Simultaneous pressure of the bulb and of the finger on the relief tube creates a pressure within the bottle which will cause the liquid to flow through the spout. When the finger is removed from the relief tube the flow of liquid is instantly shut off.

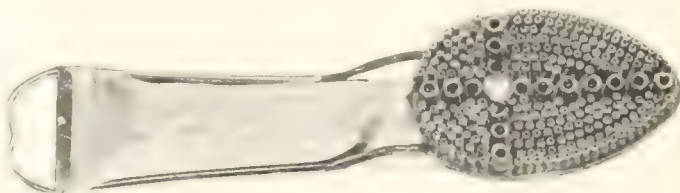


A MOTORCYCLE PANNIER AND CARRYALL.

A new device which calls for the use of waterproofed canvas is now being offered the tourist and others. It consists of a pair of pannier bags, 16 x 14 x 4 inches in size, designed for attachment, by an arrangement of straps, to the luggage carrier of a motorcycle. The weight of the panniers is only 1¾ pounds, and their usefulness is not confined to the tourist, being equally suitable for salesmen, messengers or postmen on rural routes. [New York Sporting Goods Co., 15-17 Warren street, New York.]

THE "SANI-MASSEUR"

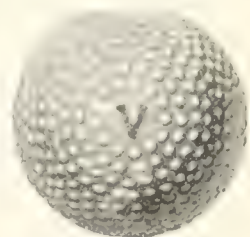
The "Sani-Masseur," a photograph of which is reproduced below, in addition to performing the usual offices of the ordinary massage device, at the same time applies a soothing cream and vacuum cleans the skin. As indicated by the illustration, the device consists of a rubber brush, each bristle of which is made in the form of a hollow tube.



There are 240 of these rubber bristles, of various sizes, and descriptive circulars sent out by the manufacturers state that "Its 240 vacuum 'fingers' will 'vacuum' away your wrinkles, pimples, blackheads and enlarged pores." Each "Masseur" is supplied with an attached tube of face cream, a slight pressure on the end of the tube being sufficient to squeeze enough cream through a hole near the center of the brush for one application, and after use it may be cleansed with hot water. [Fleur-de-Lis Specialty Co., 32 South Wabash avenue, Chicago.]

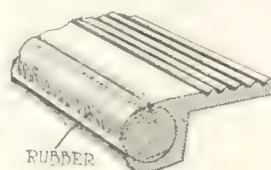
THE DUNLOP V GOLF BALL

A new golf ball, made under a patent vacuum process which extracts all air from the ball during the operation of molding, which is said to render it more homogeneous—the shell and the core becoming practically one mass and making splitting and loosening of the shell impossible—has just been placed on the market. The manufacturers claim for it that it is the most perfectly spherical ball yet made, and that it will positively retain its shape, their contention being that by using a thin and highly resilient cover with a tightly wound core both the hard hitter and his less muscular rival get full value for their shots, whereas in the case of the ordinary ball—wound very tight and covered with a more or less hard shell, so that it will not "squab" or flatten on the face of the club—it is only the man of superior strength who can hit hard enough to compel the cover to give sufficiently to obtain the benefit of the elasticity of the rubber core. [The Dunlop Rubber Company, Ltd., Birmingham, England.]



RUNNING BOARD WITH RUBBER STRIP.

The Upton Safety Step, as here illustrated, is now being offered to the motoring public and will probably contribute largely to individual safety and comfort, being designed to prevent the



foot from slipping on the running board of the automobile. The device consists of a circular strip of red rubber set into a groove formed in the edge of an aluminum or other metal step. Aside from its practical value as a preventive against accidents, the red rubber strip—which may be renewed when it becomes worn—adds an attractive finish to the step.

THE NEW RUBBERSET NAIL BRUSH.

A Rubberset Sanitary Nail Brush, as illustrated below, is the latest achievement of the makers of the famous Rubberset shaving, tooth and paint brushes. The bristles of this brush are stiff and thick, specially selected so that they will not soften from usage or constant immersion in water, and each tuft of bristles is firmly gripped in its hard rubber base, eliminating all possibility of the individual bristles becoming loose. Another feature of this nail brush is that the handle is made of hard wood and water-proofed, so that it may even be subjected to boiling water without danger of injury to either base or bristles. [Rubberset Company, Newark, New Jersey.]



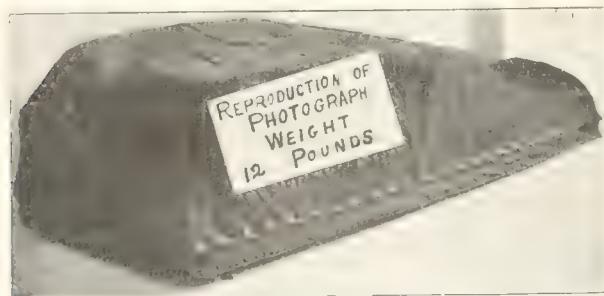
A RUBBER BLOWER FOR ANTISEPTIC POWDER.

A preparation now on the market for the relief of sufferers from colds, catarrh, hay fever, influenza, bronchitis and all kindred and similar maladies, depends largely for its success on a rubber bulb or powder blower. The preparation consists of an antiseptic powder composed of mineral salts, to be used in sterilization of the mucous membrane of the nose and post-nasal cavity. This is effected by means of the rubber blower, in the manner illustrated. The rubber bulb is pressed flat, the tip inserted in the powder and the pressure suddenly released, when it will be found that a quantity of the powder has been sucked up into the bulb. The blower is held at a little distance below the face and the powder, a thin cloud of which is made by pressing the bulb sharply in quick succession, is inhaled. Then in a similar manner the powder should be inhaled through the mouth and exhaled through the nose. [Maignen Chemical Company, 1311 Arch street, Philadelphia.]



THE "COMPACT" PNEUMATIC CAMP BED.

The cut below shows the Whall Compact Pneumatic Camp Bed, an accessory which especially commends itself to the camper because of its light weight (it weighs only 12 pounds) and because of its imperviousness to both wind and water. The outside covering is made of 12-ounce brown waterproof duck, with a fullness of 68 inches over the shoulders and of 30 inches at the feet, allowing ample room for bags and blankets. It



opens at the front, almost the entire length of the bed, permitting of airing as well as arrangement of the bedding. The air sack—made of rubber stock under the company's Longitudinal Stay Device patent, which confines the air in sections—is the width of the bed and 48 inches long. This air sack is in a boxed pocket, the bottom and sides of which are made of waterproof duck to keep the moisture of the ground from reaching the air sack. Tubes for inflation and valve connection are furnished with each camp bed. This "Compact" bed retains many of the

features of the better-known "Comfort" Sleeping Bag made by the same concern, but it is lighter in weight and less expensive. [Metropolitan Air Goods Co., Reading, Massachusetts.]

INSULATED WIRE AND CABLES.

An interesting lecture was lately delivered before an industrial school in Boston by W. I. Middleton, electrical engineer of the Simplex Wire & Cable Co., Boston, upon the manufacture and testing of insulated wire and cables. His talk was more or less informal, and was illustrated by slides showing the machinery and apparatus used in the above operations. The entire process was followed, from the tinning of the copper wire to prevent any action of the free sulphur in the rubber compound on the copper, to the completed aerial, underground or submarine cables.

In dealing with the subject the manufacture of rubber compounds was first taken up, the machinery for handling the raw rubber being shown by slides at its various stages of operation, the necessity being emphasized of preventing foreign substances from getting into the compound and thus spoiling it as an insulator.

The lecture was likewise illustrated by a number of pictures which showed among other subjects the tubing machines and the large vulcanizing drums, while the process of vulcanization was likewise explained. Other features described were the braidings, the waterproofing and finishing of braids, and the various ways of laying up copper strand and multiple conductor cables, as well as the lead covering process and the armoring of submarine cables.

In order to make the completed cable free from defects, the rubber-covered wire should be carefully tested as it passes through the various operations. The views exhibited included those of the different testing sets for insulation resistance and capacity, as well as the generator and transformer sets for voltage tests from 500 to 110,000 volts. The large tanks necessary for submerging great quantities of wire at the same time were also represented.

An important point urged by Mr. Middleton was the desirability of uniform specifications on insulation, which subject had lately been reported upon by the Joint Rubber Insulation Committee, and their report reprinted by the Simplex company.

CENSUS STATISTICS OF COTTON GOODS PRODUCTION.

In the issue of March last the varieties and uses of cotton were dealt with, as well as the principal statistical facts affecting the production of the staple. An interesting sequel to this article is the Census bulletin of textile manufactures, in which cotton goods, as recorded for the census of 1909 (the latest return available), hold the leading place:

	Total.	Cotton.	Wool.	Silk.	Flax, etc.	Dyeing, etc.
Textile establishments in United States	5,359	2,698	1,114	852	257	426
Capital (millions of dollars)	1,811	926	506	151	83	114
Products, 1909 (millions of dollars)	1,685	829	507	197	68	84
Primary horse power	2,099,050	1,400,226	400,762	97,947	92,369	107,746

Including hosiery and knit fabrics, cotton goods had thus slightly over 50 per cent. of the establishments in the combined textile industries, while the capital and value of products were in about the same proportion. The amount of primary horse power used was about 70 per cent. of the aggregate employed in the textile industry generally, the larger amount of mechanical force required for the operation of a cotton mill being thus indicated.

The special statistics relating to the cotton industry show that the consumption of raw material by that branch was as follows:

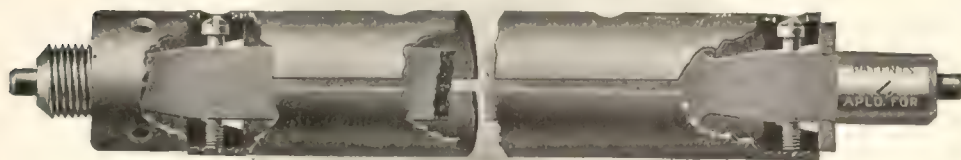
CONSUMPTION OF COTTON BY COTTON MANUFACTURING INDUSTRY.

	1899.	1909.
Cotton goods	1,817,643,390	2,332,262,630
Cotton small wares	3,640,878	3,082,270
Hosiery and knit goods	49,451,301	75,416,023
Total pounds	1,870,735,569	2,410,760,923

New Machines and Appliances.

COLLAPSIBLE REWINDING SHAFT.

THE average workman in a rubber mill is accustomed to handling machinery and apparatus which is very strong in construction and not in any sense fragile. This applies to all parts of rubber machinery. A collapsible rewinding shaft, or expansion shaft, as it is sometimes called, must present at least two important features to be at all practical; it must be simple to operate and it must be durable. In



CAMERON COLLAPSIBLE REWINDING SHAFT.

order to provide such a device, one company has introduced a shaft of simple design, but of strong construction, to be used primarily in connection with slitting and rewinding machinery. The shaft has been tested under varying conditions during the past year, with results which seem to have proven satisfactory in every respect. The illustration herewith shows the construction of the shaft. It is worth noting that its only movable part is a core bar which runs through the center throughout the entire length of the shaft. The shaft is operated by backing off the nut on the threaded end, which causes it to collapse. Returning the nut to its working position expands the shaft. The device can be used in connection with all types of centre-wind machines as well as drum or surface-wind machines, or where the shaft is required to be removed from the roll. [Cameron Machine Co., Brooklyn, New York.]

THE GYRATOR SIFTING MACHINE.

The type of machine employed in the majority of rubber factories for sifting compounding ingredients embodies a rotary brush revolving in contact with a screen. The accompanying illustration shows an entirely different type of sifter, a machine which has been used for years in flour mills and in other industries for sifting materials of a similar nature, and which has recently been introduced in several rubber factories for sifting compounding ingredients in either large or small quantities. Referring to the illustration, the sieve case is suspended from the ceiling by four groups of wooden hangers *A* and is actuated by a single eccentric balance flywheel *B*. The spindle supporting the flywheel runs in a reservoir of oil and the journal boxes are so arranged as to prevent the accumulation of grease and dirt about the machine. The bearings of the eccentric box in the flywheel are adjustable from the rim of the wheel. When the mechanism is set in motion by some outside source of power transmitted to the belt pulley *C*, the sieve box *D* is given a combined reciprocating and gyratory motion, which keeps the materials to be sifted in constant agitation above

the screens and facilitates the sifting. The swing of the box is counterbalanced by weights properly adjusted in the flywheel and a perfect running balance is secured. The sieves, of which there may be any desired number in each box, are independent of each other and the screens are removable at any time while the machine is standing or in operation. The material is placed in a hopper above the board *E* and falls out, after passing through the screens, into receivers placed under the boards *F*.

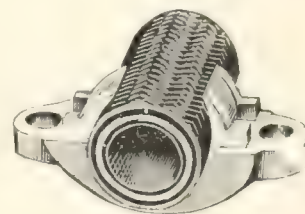
The flexible wooden hangers *A* and the tubular fabric chutes *G* allow a free, gyratory motion of the machine. [The Wolf Co., Chambersburg, Pennsylvania.]

A NEW HOSE CLAMP.

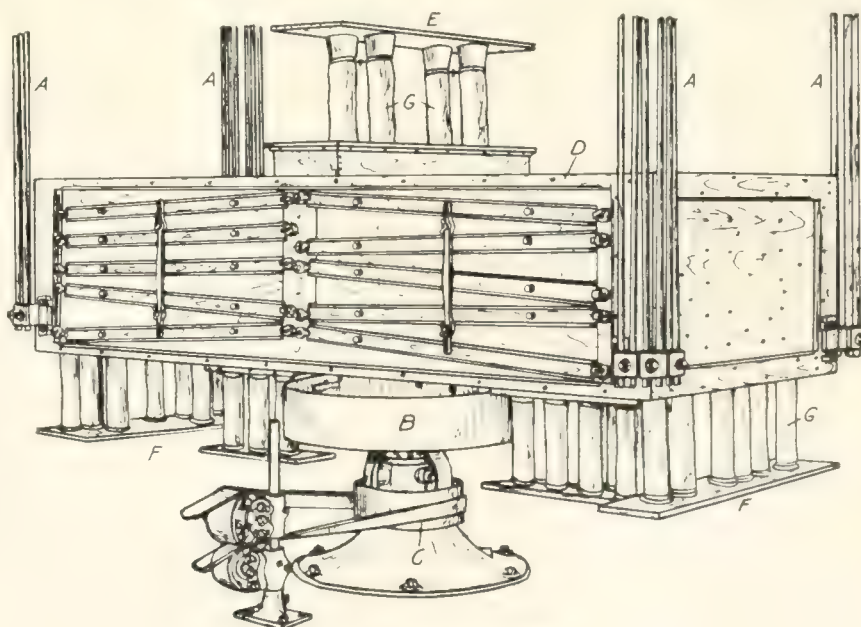
It has hitherto been a matter of considerable difficulty to effect a hose connection at the same time tight and durable. This trouble has increased with the degree of pressure to which the hose has been subjected.

The extent to which compressed air and gases at high pressure are

now used has led to a demand for a hose clamp thoroughly serviceable in the above-named respects, permitting of connections hitherto unattainable being made, and replacing cone-couplings. This object has been effected by the "Hercules" clamp in two parts, made by H. Schubart & Co., Cassel, Germany, shown by the accompanying illustration. This permits of a uniform radial pressure from four sides at the point of connection.



The "Hercules" clamp has been known to resist a pressure of 300 atmospheres (4,416 pounds per square inch), while the use of a second clamp made it possible to increase the pressure 50 per cent.



THE WOLF GYRATOR.

THE MAGNETIC CLUTCH AS A SAFETY DEVICE

The hazard assumed by workmen engaged at and about rubber mixing rolls, washers, crackers, calenders, etc., has long been recognized, and many devices have been developed and installed for the purpose of making it possible to shut down the machinery promptly in case of accident. The most recent safety appliance to be used on rubber machinery is the magnetic clutch, but even these devices were introduced several years ago. The latest type of magnetic clutch embodies not only a means of coupling the driving shaft to the driven member, but, in addition, includes an automatic brake, which is applied when the current is interrupted either intentionally or by accident. Magnetic couplings or clutches require but little space along the shaft, are made up of few parts and have perfect running balance. They have no links or other parts which are liable to breakage or sticking, and do not throw grease or dirt. In fact only two criticisms had ever been made on early installations.

One objection was that the time lag between the opening of the operating coil circuit and the releasing of the coupling varied, being so small as to be practically negligible when the couplings were fully loaded, but large when the couplings were operating under light load conditions.

The second objection was that they were not adapted to reaccelerate the load after the machinery had been shut down by their disengagement, for the reason that they were not made to engage gradually, but took hold almost as suddenly as a jaw coupling.

The first objection appears to have first been recognized by Mr. Myers, chief engineer of the Firestone Tire & Rubber Co., who suggested the installation of an automatic band brake on the mill side of the cut-off couplings. The second has been overcome by the design of a new form of magnetic clutch which is adapted for gradual acceleration.

This type of safety device has been developed by the Cutler-Hammer Clutch Co., of Milwaukee, which concern has been very active during the past two years, co-operating with the superintendents of various rubber factories, in installing magnetic clutch safety devices, and in making exhaustive tests to prove their contentions. In this article we will first describe the clutch and magnetic brake referred to above, and then give the results of some actual tests made with the apparatus.

Fig. 1 shows a cross section and a side elevation of the Cutler-



FIG. 1. MAGNETIC CLUTCH WITH AUTOMATIC BAND BRAKE.

Hammer magnetic clutch equipped with an automatic band brake. The clutch comprises two members, the field or driving member *A*, which carries the magnetizing winding *B*, and the armature or driven member *C*. The driving member has a hub *D*, which is bored to fit the driving shaft. The driven member has a similar hub *E*, which is also bored to fit the driven shaft. Near the outer edge of the member *A* is an annular groove containing the magnetizing coil *B*. Attached to the hub *E* is a flexible spring steel plate *G*, which carries the armature

C. Between the two parts of the clutch at the outer edge is a friction facing *H*, which prevents the armature from coming directly against the face of the coil, and also provides high frictional contact for driving. This friction facing is made from woven asbestos and brass wire, similar to the brake lining ordinarily used in automobiles. On the hub *D* are two contact rings *J*, which are insulated from each other, and which are attached to the ends of the magnet winding *B*. The winding is thus supplied with current by contact with a pair of brushes *K* connected with the source of power. Attached to the driven member is a brake drum *L*, around which the brake band *M* fits. This band is of the same material as that used in the friction facing between the clutch members. The ends of the brake band are pivoted at *N* and *O* to a lever *P*, which carries an adjustable weight *Q* at its outer end. Near the center of this lever is pivoted a vertical rod *R*, which extends up into the cylinder *S*. This cylinder encloses a solenoid, by means of which the lever *P* may be raised when the solenoid circuit is closed, thus loosening the brake band around the drum *L*.

The operation of the device is as follows: Assuming that the clutch is mounted on the ends of the driving and driven shafts between the electric motor and the mill, and that the mill is at rest, the current is gradually applied to the magnet coil by means of a rheostat. As the current increases in the coil the flexible steel plate containing the armature is pulled toward the coil. The friction gradually increases between the armature and the friction facing until the current is strong enough to rotate the driven member at the same speed as the driving member. When the current is applied to the magnetic coil, the same source of current is employed to energize the solenoid and to lift the weighted lever *P*, thus loosening the brake band *M*, and allowing the brake drum *L* to run free with the driven shaft. The rod *T* is attached to some permanent support, and only serves to hold one side of the brake band at a point which acts as a pivot when the brake is applied or loose.

In case of accident to the operator or to the machine the switch is thrown by means of a rod or lever conveniently placed, thus breaking the circuit supplying current to the clutch coil. This also interrupts the solenoid circuit, allowing the lever *P* to drop. When this lever drops the weight applies considerable leverage to the brake band, tightening the band around the drum. Thus it will be seen that in addition to shutting off the power, the brake is applied the instant that the two shafts are uncoupled, bringing the mill to a quick stop.

The efficiency of this apparatus was recently demonstrated by a series of tests carried out in the plant of the Racine Rubber Co., of Racine, Wisconsin. There is installed in this plant a 200 horse power, 590 r. p. m. motor geared to a line shaft, from which are operated three rubber mills having 20 and 22-inch rolls, 60 inches long. The clutch is installed between the motor and the mill gears. It is 30 inches in diameter, built in combination with a 33-inch solenoid operated band brake. The herringbone pinion mounted on the shaft to which the motor may be coupled or uncoupled by means of the magnetic clutch, has 21 teeth, $1\frac{3}{4}$ d. p., and 14-inch face. The gear driven by this pinion has 126 teeth, and weighs approximately 3,500 pounds. From the gear ratios specified it will be seen that the speed of the mill shaft is approximately 100 r. p. m. The three mills driven from this shaft are each operated through machine molded cast gears, the pinion having 16 teeth, and the gear on the drive roll 75 teeth. The speed of the drive roll is, therefore, 21 r. p. m. The gear ratio between the drive roll and front roll is 17 to 27—the friction ratio being, consequently, 1.45 to 1. From the foregoing data

it will be noted that when operating at full speed the peripheral velocity of the drive roll is 22 inches per second.

Fig. 2 shows diagrammatically the installation of the magnetic clutch and brake described above. The shaft of the electric motor *A* carries the driving member *B* of the clutch. This part of the clutch is mounted on the end of the motor shaft. The end of the driven shaft *C* carries the armature *D* of the clutch. Thus it will be seen that when the clutch is disengaged the two shafts are independent of each other. The shaft *C* also carries the automatic brake *E*, which is applied when the clutch circuit is broken. The three mills referred to above, only one of which is shown at *F*, are driven from the common shaft *G* through the pinion *H* and gear *I*. In other respects the drive of the three mills is the same as in any ordinary installation.

There is installed on each mill a safety switch by means of which the operator can, in case of emergency, open the circuit to both clutch winding and brake solenoid, thereby releasing the clutch and applying the brake.

THE TEST.

For the purpose of measuring the roll travel from the moment of opening the safety switch to the moment of the machinery coming to rest, a tape of drawing paper was glued to the periphery of the 20-inch roll. An electromagnet so designed as to be particularly quick-acting was mounted in a position immediately above the paper tape on the roll, so that a pencil attached to the armature of this electromagnet was held clear of the roll when the magnet was energized; but when the magnet was de-energized the pencil was dropped on the paper, and the distance traveled in stopping accurately measured thereby. It should be particularly noted that this magnet not only indicates the movement of the rolls during the period after the release of the clutch when the brake is bringing the equipment to rest, but it also indicates the time lag between the operation of the safety switch and the releasing of the clutch and application of the stopping brake, because, as already stated, the pencil relay employed was so designed as to be practically instantaneous in operation.

The first test made was to start the equipment, bring it to full speed and shut down by opening the motor line switch at a time when none of the mills was loaded. Under these conditions the drift of the roll in coming to rest measured 276 inches. A second test was made with one mill loaded, under which conditions the distance traveled by the drive roll in stopping was 51.9 inches.

A second series of tests was made to indicate the travel of the rolls before coming to rest by merely opening the circuit to the magnetic clutch without applying the solenoid brake. During these tests the solenoid brake was blocked so as to prevent its application. The first test of this series was made with the rolls operating light, and the distance traveled measured 86 inches. With one mill loaded, the distance traveled by the drive roll before stopping was 18 inches.

The next test was made with the three mills operating light, the clutch and brake circuits being opened simultaneously, and an 18-pound weight being used on the brake lever. Under these conditions the travel of the drive roll was 10.5 inches. During this test it was noted that the brake applied considerably in advance of the releasing of the clutch.

The weight on the brake lever was next changed from 18 to 31 pounds, and two tests were made with this weight on the lever—one with the mills operating light, and the other with one mill loaded. Under the first condition the travel of the

front roll before stopping was 6.75 inches, and with one mill loaded the travel was 4.5 inches. On both of these tests it was noted that the brake applied considerably in advance of the release of the magnetic clutch, and in one case the mills were practically at rest before the clutch fully released. It was, therefore, determined to accelerate the releasing of the clutch by arranging to reverse the direction of current flow in its wind-

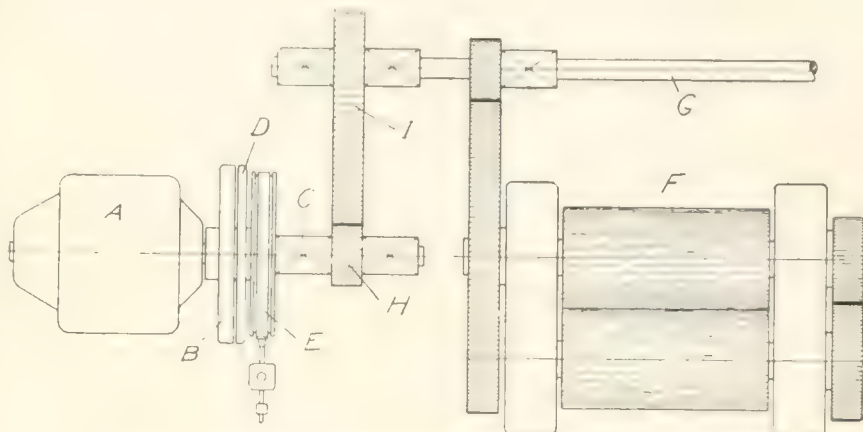


FIG. 2. DIAGRAM SHOWING INSTALLATION OF CLUTCH AND BRAKE.

ing, a preventive resistance being included in the circuit, which was of such value as to prevent the re-engagement of the clutch after release. Two tests were made with the reverse switch installed, the first of which was made with 18 pounds on the brake lever and one mill loaded, under which conditions the travel was 4 inches; the second with 31 pounds on the brake lever and one mill loaded, under which conditions the distance traveled after operation of the safety switch was only 2 inches.

As a result of these tests it was determined to install a reverse switch and to leave the equipment with the 18-pound weight on the brake arm. Under these conditions, as already noted, the travel of the roll periphery, after operation of the safety switch, will be 4 inches with one mill loaded, and less than 4 inches in case more than one mill is loaded. It was not deemed advisable to install the 31-pound weight permanently, on account of the severe strains to which the machinery was necessarily subjected to bring the rolls to rest with a movement of but 2 inches.

The following tabulation shows the results obtained in the above tests, in a form which will permit of easier comparison:

Motor Circuit Opened		Clutch Circuit Opened		Clutch Opened, 18 lb. Brake		Clutch Opened, 31 lb. Brake		Clutch Opened and Rev. 18 lb. Brake Set		Clutch Opened and Rev. 31 lb. Brake Set	
Light	1 Mill	Light	1 Mill	Light	1 Mill	Light	1 Mill	Light	1 Mill	Light	1 Mill
276"	51.9"	86"	18"	10.5"	6.75"	4.5"	4"	4"	2"	2"	2"

QUICK CURING MOLDS.

A new system of making soft metal mold castings for the manufacture of all blown rubber work is the subject of a recent patent. Under the present system the walls of molds are of unequal thickness. This causes loss of time in vulcanization and cooling, extra effort in handling and uneven vulcanization.

The soft metal used also costs from 15 to 25 cents per pound, according to quality, and approximately eighty pounds of metal is contained in a two-cavity mold formed for the purpose of manufacturing the ordinary auto horn bulb. Manufacturers frequently use more than 500 molds of this sort weighing approximately 40,000 pounds. Under the new process molds are made with the walls of a uniform thickness of about one-eighth of an inch. This is done by means of pressure, by the use of a die and a polished steel plunger. The metal is thus solid and homogeneous, and the interior finished with a glassy, smooth surface, which prevents scaling and warping. A light iron frame outside of the soft metal protects it from injury.

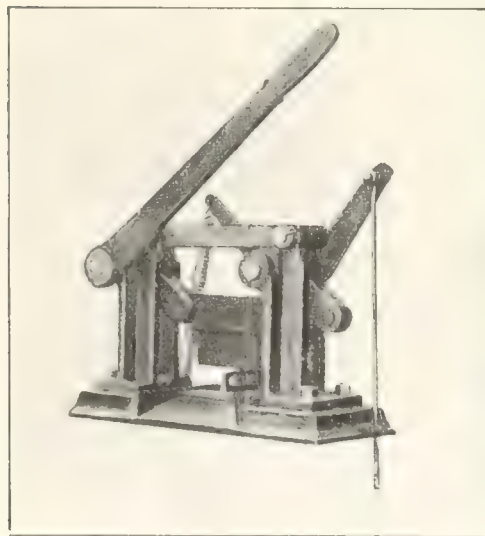
Referring to the drawing, which shows a section of a mold for making sectioner bulbs such as are used on atomizers, the mold shells *B* are formed with flanges *F*, which inter engage, and also fit into recesses in plates *C*. These plates are connected with the upper and lower frame plates *D* and *E* by set screws *G*, and the mold sections are clamped together by thumb screws *A*. The mold shells *B* are cast in non-ferrous metal such as tin, type-metal, aluminum or alloy, and are finished smooth by swaging. A mold of this sort may be made of ten cent metal, and weighs ten pounds. Thus 500 two-cavity auto horn bulb molds would weigh only 10,000 pounds as against 40,000 pounds weight for the same number of molds as made today.

Quick curing and cooling, lengthened life, more frequent use, economy in metal, and greater care in handling are some of the results obtained.

The inventor is William Eggers, of Brooklyn, New York, a practical mold maker known to the whole trade.

RUBBER STOCK CUTTING SHEAR.

A convenient form of shearing machine for cutting rubber stock which is to be placed in molds to be cured—such as horseshoe pads, rubber heels, and other small rubber articles—has been introduced by a manufacturer of rubber machinery.



SHEARING MACHINE FOR CUTTING RUBBER STOCK.

This machine is built to be operated either by hand or foot pressure, the shearing action of the knife on the stock being such as to produce a clean, smooth cut. The knife is of fine tool steel and will hold its cutting edge without frequent sharpening. Where the knife comes in contact with the frame there is placed a hardwood strip in a groove of the frame to protect the cutting edge. The frame is of cast iron and is machined at the joints. Altho the machine shown is of small size, shears of larger construction for special purposes may be built to order. [Birmingham Iron Foundry, Akron Branch, Akron, Ohio.]

VULCANIZERS FOR EVERY PURPOSE.

The Biggs Boiler Works Co., of Akron, Ohio, has just issued catalog No. 16 covering tire repair equipment. The catalog contains 40 pages showing different styles of both vertical and horizontal tire and tube vulcanizers, as well as small apparatus for the repair shop and garage. Several pages are devoted to directions for installing and operating

repair equipment heated by coil steam generators. The gravity-return and non-return systems for operating steam vulcanizers are illustrated and described.

THE WERNER & PFLEIDERER CO. OPENS A WAREHOUSE.

In connection with its New York office, 1031 Tribune Building, the Werner & Pfleiderer Co. has opened a warehouse in that neighborhood where prospective customers can see all the various machines made by the company—washing, masticating, compounding machines, as well as rubber solution and cement making machines—thoroughly demonstrated, so that they can judge their value for themselves. Customers from out of town will find it to their advantage to make an appointment in advance, and if they wish, they can bring their own materials to be used in these demonstrations.

AKRON-WILLIAMS TIRE REPAIR OUTFITS FOR FORD SERVICE STATIONS.

The Ford Motor Co. recently ordered Akron-Williams localized heat tire repair outfits for each of its fourteen service stations. As this was done after very thorough testing of the quality and efficiency of various repair outfits, it may be considered a great compliment to the Williams Foundry & Machine Co., of Akron, which manufactures these outfits. The "A-W" tire repair vulcanizers have the exclusive feature—which is patented—of localized steam chambers. Each section is heated by three separate steam chambers, which makes it possible to apply the heat exactly where the repair is to be made and to prevent over-curing or burning.

ANOTHER TIRE TREAD.

Miller's Non-Skid "Cog" Tread is noted for its triple traction surface and surplus rubber to resist rut-wear and which suffices, when ground-tread is worn smooth, to provide a two-thirds traction surface, obviating the necessity of chains on slippery drives. The corrugated or "Cog" tread surface is said to promote a highly satisfactory action and to be wear resisting. (Chas. E. Miller, Anderson, Indiana.)



RUBBER GARTERS WITH POCKETS.

It is currently reported—whether the report is true or not it is impossible at this time to verify, there being no statistics in this office bearing on the subject—that some women at some times deposit their valuables in their hosiery. In order to accommodate ladies with such tendencies, and to make it easier for them to deposit their valuables where they can be obtained with a fair degree of readiness, a woman residing in one of the smaller towns of New York State has devised an elastic garter—made presumably of rubber threads—which is in reality a double garter with a number of pockets sewed in between the two, the pockets of course opening at the top. The theory is that diamond rings and other small but valuable objects can be deposited in these bags, the garter put in its place and the desired security obtained. It is hardly necessary to add that to make this movable deposit entirely secure the garter should be a good fit and the rubber of such a quality that it will not give way while the wearer is about her daily walks.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the month of February, 1914, and for the first seven months of five fiscal years, beginning July.

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
February, 1914	\$140,015	\$77,504	\$451,992	\$669,511
July-January, 1914	1,429,857	755,067	4,305,884	6,490,808
Total, 1913-14.	\$1,569,872	\$832,571	\$4,757,876	\$7,160,319
Total, 1912-13.	1,766,066	1,077,329	5,339,773	8,183,168
Total, 1911-12.	1,491,121	1,139,181	4,640,177	7,270,479
Total, 1910-11.	1,354,060	1,699,371	3,899,406	6,952,837
Total, 1909-10.	1,233,910	1,437,252	3,053,753	5,724,915

The above heading, "All Other Rubber," for the month of February, 1914, and for the seven months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other	TOTAL.
February, 1914	\$169,174	\$38,848	\$208,022
July-January, 1914	1,882,681	339,390	2,222,071
Total, 1913-14.	\$2,051,855	\$378,238	\$2,430,093
Total, 1912-13.	2,327,096	410,891	2,737,987
Total, 1911-12.	1,641,373	349,372	1,990,745

RUBBER CLUB NEWS.

The Rubber Club of America is a member of the Chamber of Commerce of the United States of America, of Washington, D. C., and was recently asked to vote on certain recommendations which the latter body contemplates submitting to Congress. The first recommendation called for the creation by Congress of an Interstate Trade Commission, but the Rubber Club, after a thorough canvass of its firm members, has decided to oppose this recommendation and has registered a negative vote with the Chamber of Commerce.

At the meeting of the Executive Committee held May 19, 1914, Francis H. Appleton, Jr., was appointed chairman of the Sports Committee in place of W. L. Pitcher. Mr. Pitcher declined to serve, on the ground that the chairman should be someone located in Boston.

Capt. Francis H. Appleton was appointed chairman of the Committee on Resolutions in place of E. E. Wadbrook who declined to serve.

Henry Spadone, of the Gutta Percha & Rubber Manufacturing Co., was added to the Nominating Committee in place of E. E. Wadbrook who declined to serve.

A special committee to decide the date and place of the outing of the club the coming summer was appointed as follows: Frederick H. Jones, of the Tyer Rubber Co., Andover, Massachusetts; Robert L. Rice, Hood Rubber Co., Watertown, Massachusetts, and Harold P. Fuller, of the E. H. Clapp Rubber Co., Boston.

George B. Hodgman and Harry S. Vorhis were appointed as delegates of the Rubber Club of America to the Chamber of Commerce of the United States of America. George B. Hodgman was appointed a member of the National Council of this Chamber.

F. H. Sanford, formerly manager of the firm of Adelbert H. Alden, Limited, of Manáos, Brazil, is now living in the south of France, having retired from the rubber business with a competence.

THE EDITOR'S BOOK TABLE.

SOLVENTS, OILS, GUMS, WAXES AND ALLIED SUBSTANCES.

By Frederic S. Hyde, Ph.B., New York, 1913. D. Van Nostrand Co. [Cloth, 8vo, 176 pages. Price, \$1.00.]

IN this condensation of the main facts relating to the commercial organic products associated with industrial chemistry, Mr. Hyde has placed a valuable book of reference at the disposal of factory chemists and others interested in technical investigations.

Besides the subjects referred to in the title, there are various others dealt with, bringing the number of chapters to fifteen. Under the head of "Various Solvents and Fluids" prominence is given to aldehydes, alcohols, ethers and benzol derivatives, attention being drawn to the distinction between the last-named substance (or b-e-n-z-e-n-e) and petrolic benzine, or refined naphtha. The following chapter is devoted to terpene bodies, camphors, essential oils, fragrant substances and balsams.

In the third chapter the differences are pointed out between true gums and gum resins, which do not come under the former category. At this point the rubber chemist will find interest in the chemical description of rubber, recalling certain known facts such as the specific gravity of pure rubber being less than that of water. The commercial product in balls or cakes, it is added, is generally gray or brown from oxidation and impurities, being more or less elastic and liable to have a sour, unpleasant odor. It is insoluble in alcohol, and unaffected by dilute acids or alkalis.

Manufactured rubber may, however, be rendered soluble by treatment with: (1) Acetone, to remove resins, oils, etc.; (2) alcoholic potash, to remove oxidized fatty "substitutes"; (3) cold nitro-benzol, to remove asphalt or pitch; (4) boiling nitro-benzol for solution, leaving a residue of mineral matter. Anilin at from 140 degs. to 180 degs. C. has also been proposed as a solvent, the rubber being separated as a tough mass. In the author's opinion hot or boiling nitro-benzol is one of the best rubber solvents, altho the material in solution may thereby become partially blackened or carbonized. Pure rubber freshly cut loses its elasticity on heating, and becomes brittle on chilling. Vulcanizing increases elasticity and insolubility, but lessens durability and adhesiveness. Hard rubber contains an excess of sulphur and "filler," baked at 150 degs. C.

Gutta percha is closely related to caoutchouc, but is from the latex of a different tree, being less elastic and harder than rubber. Rubber substitutes are made from corn oil, linseed oil and similar vegetable oils by the action of sulphur or sulphur chloride, the latter producing a light, spongy mass somewhat elastic, but friable and lacking in resiliency. Another group considered is that of bitumens.

Carbohydrates, albumenoids and proteids are next taken up, followed by a discussion of the commercial tests on oils and fats. The final chapters deal with waxes and miscellaneous organic substances. A full index facilitates reference, and enhances the value of this useful work.

VANDEGRIFT'S DIGEST OF UNITED STATES TARIFF ACT, 1913. F. B. Vandegrift & Co., 15-25 Whitehall street, New York. [Paper, 182 pages. Price, 50 cents.]

TO those seeking for light on points connected with the tariff of 1913, this handy little work affords a quantity of needed information. In the first place the act itself, with its fourteen schedules and the free list, occupies some 60 pages, forming the first section. Section II, covering 21 pages, contains the provisions of the income tax legislation, while in Sections III and IV various administrative features are treated. The text concludes with an extract of the sections of the act of 1909 not repealed by that of 1913. An alphabetical schedule of the duties, with references to the respective paragraphs, completes the work, which will be appreciated by all interested in the import trade.

NEW TRADE PUBLICATIONS.

THE B. F. Goodrich Co. has recently added to its already extensive series of aids to Goodrich tire dealers a set of four unusually attractive window cards or wall hangers. One of these cards—which are 11 x 14½ inches in size, on a white ground with narrow inside gray border—shows a picture of a “Native Gathering Sap.” This young African girl’s raiment is truly barbaric in splendor and wealth of coloring and she is pictured in the act of making incisions in the bark of a rubber tree with a tapping knife. This picture is intended to convey an idea of the purity of the rubber used in Goodrich tires, coming direct from the rubber groves and being nature’s contribution to their production. Another card, in equally effective colorings, shows water being poured from one glass to another, and suggests that as waters from the Atlantic and the Pacific poured into the same glass become one and inseparable, so largely become the fabric and rubber in Goodrich tires. A third card, perhaps more striking and attractive than either of the other two, shows an automobile containing a young woman and a little girl, the former driving the car. This suggests the advisability of using the Goodrich tire “with the tread that makes the brake effective and makes motoring safe for her and the kiddies.” The fourth card has a picture entitled “Eating up the Road,” a feat claimed to be possible of accomplishment with Goodrich tires as against the usual result of the road eating up the tires.

The Encyclopedia of Selling Helps, issued by the Dealers’ Help Department of the Goodyear Tire & Rubber Co., for the exclusive use of Goodyear dealers, is a notable addition to rubber trade literature. It contains suggestions for 100 ways of pushing business, these suggestions being contributed by 20 expert workers, as the result of extensive investigations carried on among retail dealers all over the country. Commencing with attractive transparencies, window cards and outside and inside hangers, and continuing with handbills, calendars, stickers, blotters and all the more familiar forms of general advertising, there follow pages devoted to moving picture slides, furnished free and charges prepaid; road signs, at prices amounting to only about one-sixth the usual charge; ready made ads., tire racks and display stands; a plan for mail order correspondence, including stationery, folders, form letters, etc., etc. This book of selling helps covers 32 pages and is attractively illustrated throughout in colors. Each copy sent out is accompanied by an order slip containing a list of these various helps, which the dealer may use in sending in his requisition. This encyclopedia should be extremely valuable to the tire dealer, giving him a better idea of the merchandise he offers for sale and suggesting means by which he may secure at trifling cost—and in some cases without any expense whatever—well prepared and carefully thought out advertising matter which is bound to attract the consumer’s attention.

“General Information Regarding Fire Insurance Requirements” is the title of a little pamphlet published jointly by the New York Chapter of the American Institute of Architects and the New York Board of Fire Underwriters, and issued under the auspices of the National Fire Protection Association, with the object of promoting the science and improving the methods of fire protection and prevention, as well as of diminishing the enormous national fire waste of more than \$200,000,000 annually. Attention is called to the six important conditions to be taken into account: 1, Exposure to fire from without; 2, Construction of the building; 3, Plan of the building; 4, Fire extinguishing equipment; 5, Nature of the occupancy; 6, Public fire protection. In conclusion this little guide presents a list of some thirty pamphlets giving information on the important subjects which are available for distribution.

Send for index to “Crude Rubber and Compounding Ingredients.”

FIRESTONE CUTOUTS.

Before the close of the present motoring season the three figures shown in the accompanying cut will probably have become familiar to every automobilist in the country as well as to those who hope some day to be automobilists. These figures represent three types of men, all of one mind, however, regarding the type of tire they consider most desirable, and each willing to give the reason for his preference. With



THE THREE “TIRE-WISE” MEN.

the car owner “strong for Firestone tires and rims” both for reasons of comfort and economy, and the driver because of infrequent tire changes and the quickness with which these are accomplished, it is quite natural for the dealer to be pleased with the product that gives such satisfaction to the buyer and user and makes him come back for more. These three figures are supplied in cutout form by the Firestone Tire & Rubber Co. to Firestone tire dealers everywhere, both in large size for window display and in miniature for insertion in mail and packages. Special stationery bearing imprints of the cutouts are also provided, with miniatures of the three contented “tire-wise men” for distribution to the motorists of the future—the children.

CEYLON AT NEW YORK 1912 RUBBER EXPOSITION.

By order of the Ceylon government, the report of Mr. F. Crosbie-Roles, commissioner from the island to the New York Rubber Exposition of 1912, has been printed. Under the various heads of “The Ceylon Stand,” “The Exhibits,” “Trade Development,” “Consular Service and Colonial Trade,” “Wild Rubber” and others, the principal features of the exposition are recorded in detail. There were 96 cases of exhibits, in addition to 24 cases containing rubber for competition. In conclusion Mr. Roles acknowledges the courtesy and hospitality extended to him during his stay in America.

CHATTANOOGA WANTS A RUBBER INDUSTRY.

An effort is being made by the Chattanooga Industrial Board—composed of members of the local Retail Merchants’ Association, Manufacturers’ Association, Chamber of Commerce, Real Estate Exchange, Jobbers’ Association and Clearing House—to interest some responsible manufacturing concern in locating a rubber industry in Chattanooga, Tennessee. This city has nine lines of railroad and a navigable river, is within 450 miles of four different ports and within 75 miles of a half dozen different textile mills. It is claimed to have hydro-electric power to a greater extent than any other city in the country, with but one exception, and obtainable at a lower price than in that excepted city, also to have steam coal at \$1.55 per ton, f. o. b. plant, and cheap and dependable labor—all of which would seem to make it a desirable manufacturing centre.

Interesting Letters From Our Readers.

AMERICAN IDEAS ON STANDARDIZING PLANTATION RUBBER.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR: Is it not time for a "Plantation Rubber Consumers' Association" to be organized in the United States to vigorously impress upon our British and Dutch planting friends the need of reforms in the East such as American manufacturers want (not as the planters think)?

Thus far the Rubber Growers' Association of London has been doing all the talking and acting, but this progressive organization makes no distinction between cultivated *Hevea* rubber from a five-year-old tree and that from a twenty-five-year-old tree. However, as the rate of growth in the East is very rapid in the sun, it is safe to assume that a ten-year-old tree having plenty of room is as large as a twenty-year-old tree in the dark forest of the Amazon Valley; hence the ten-year cultivated tree is mature, or reasonably so.

Various managers, superintendents and chemists are already lined up with my views, namely: separating the latex into three grades of maturity in the East, and smoke-curing, omitting the preliminary acetic acid coagulation. These same practical rubber men also express grave doubts as to the possibility of the proposed London Testing Station giving accurate tests, on account of the huge tonnage and also because each half ton would not be sufficient. It might be wiser to test a limited amount from every case for specification purposes when competing with Upriver fine Pará, but to attempt to properly test thirty thousand tons per annum would be very difficult indeed.

The wise rubber man is always ready to learn. In fact, one can never get through learning about rubber generally. Consequently a "Plantation Rubber Consumers' Association" would appeal to the wide-awake manufacturers who wish to take active steps to prevent tampering with cultivated rubber, excessive handling (every time the case is opened it means another shower of splinters), and to open negotiations with equally progressive plantation companies which are willing and anxious to please the manufacturers by following out their ideas in an honest manner. The manufacturers who desire relief should be adequately represented at the forthcoming London Exhibition in June.

I have been studying the preparation and production of wild and cultivated *Hevea* for the last 10 years in various producing countries, also in London, especially for manufacturers. Mr. H. C. Pearson during his trip to Malaya in 1904 found that the *Heveas* were then not tapped until they had a girth of 30 inches (3 feet from the ground).

The first lots of plantation rubber were good, but the comparative high prices in 1905-6-7 tempted the planters to try tapping trees only 18 inches in circumference. In 1907 a complaint appeared in THE INDIA RUBBER WORLD from a Canadian factory concerning the unreliable character of "Ceylon" rubber. There is no question that young or immature plantation rubber has wide variations.

As to minor variations, due to differences in soil and rainfall, also overlapping, compulsory branding on smoked sheets (without acid) would in time educate the manufacturers as to the behavior of definite lots in their works. Moisture is not necessary in plantation rubber. My opinion is that in the Amazon country smoked sheet as cured or coagulated on a revolving drum will not equal in quality the

pelles, as the natives carelessly leave the rubber exposed to the sun for weeks, causing the oxidizing of the outer layers of the balls or hams, and greatly weakening the new style sheets—which I have already seen. By the way, smoked sheet without acid when dry is practically black, but when rolled into a ball, even with a small amount of moisture, is brown or similar to Upriver fine Pará when cut open.

The smoked sheet of to-day, of a dark amber color, which is first coagulated with acetic acid, has given quite good results as prepared by some of the older estates. This is another argument for smoked sheet free from acid and guaranteed from reasonably mature trees, say 10 years old. As half the area of cultivated *Hevea* in the East is still less than 5 years old, it is quite evident the Rubber Growers' Association does not want immature rubber to be classed as inferior to mature. The only way out is for the consumers to bring pressure on the Colonial Governments for legislation making branding compulsory, and keeping separate on the estates immature latex, and not mixing same in with the milk from older trees. Limiting the huge number of styles of plantation rubber would be another blessing to the manufacturer.

Yours truly,

QUINCY TUCKER.

43 Tremont street, Boston.

WATERING OF GOLD COAST LUMPS.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR: The allegations made on the above subject in your anonymous correspondent's letter in the current issue of your valuable paper, must be viewed with the greatest concern. It is sincerely to be hoped that those implicated will take the opportunity of replying to the accusations.

At this moment it would probably be of great interest to a number of American manufacturers who use this grade of rubber to know the terms on which it is dealt in on the Liverpool Market, and the methods adopted when receiving the particular grade in question.

"Prime Selected Quality Contracts" between importers and dealers are made with the proviso of "Soft, soft-spongy, dead and loaded pieces to be rejected, *but only doubtful pieces to be cut*," and "Rejection Contracts" with the clause "excluding pasty or chalky pieces."

Now Gold Coast Lump always arrives in Liverpool in an unselected condition, the selection for the various qualities being made by the dealers themselves in the presence of a representative of the importers. If the goods are properly received, the following procedure should be observed. In order to obtain a parcel of Selected quality, it is obviously necessary for every piece to be handled and tested. There should be at least two representatives of the purchasing dealer present at the selection, men of many years' experience and unquestioned ability.

In the first place let it at once be said that the whole contents of each cask should be, according to Liverpool Rules, turned out upon the floor; any loose moisture which has sweated out of the rubber, or has been in the cask, consequently running away.

The lumps are then selected for First Quality, and doubtful pieces cut. Should any of these cut pieces turn out up to First Standard they must of course be accepted; and as Gold Coast Lump is naturally a wet and spongy rubber, it is only likely that a certain amount of water will ooze out of these cut pieces, when the cask becomes full, and pressure is exerted in order to replace the head. But this is not any loss to a manufacturer, since as no

water has been added artificially, the ultimate loss in washing will only be the same.

The figure of 60 per cent. loss which is stated by your correspondent is certainly a little more than the average, but it will probably interest him to know that, on this side, the figure generally expected by manufacturers is a loss ranging between 50 and 60 per cent., say 55 per cent. average. The fine hard "silky" lumps imported 10 to 15 years ago, which then only lost 35 to 40 per cent. are no longer available, but the comparative result to a manufacturer is the same now as then, since the extra loss is accounted for in the price. The latex still remains the same, being of exceedingly fine quality, only that the method of preparation is possibly not so good as formerly.

The suggestion made in your correspondent's letter that every warehouse he entered had a hose and faucet, has no bearing at all on the subject, as there are very few warehouses for storing any other produce in Liverpool without such conveniences. We are glad to be able to say that in most cases they remain conveniences, and are not used for purposes such as that suggested. "Because a man has a box of matches in his pocket, we cannot denounce him as an inveterate smoker."

There should be no reason why your manufacturers should not be able to rely upon the quality or condition of this grade, and it would be a great pity if, on account of one or two unfortunate experiences, their attention were wholly diverted to other grades.

Having shipped large quantities of Gold Coast Lumps to your side without the slightest complaint, we feel it our duty to assure your friends that there are still many firms dealing in this grade (amongst whom we have the honor to sign ourselves) who watch the trade's interest in the manner stated above.

In conclusion, we should just like to say that it is a great hardship if American manufacturers require the rubber re-taring on the other side. If this is done, then the dealer becomes responsible for a loss over which he has no control. If any of the loose water is allowed to run off in New York—which water is bound to collect in consequence of the cutting in Liverpool—then the consumer is obtaining the benefit as he will have correspondingly less loss in washing, as the rubber will be in drier condition than when shipped from Liverpool.

An officially certified weight-note (gross and tare) immediately before shipping should be all that is required by your friends.

Very truly yours,

27 Mining Lane, London, E. C. REITER & HANKIN

April 20, 1914.

SPLINTERS OF WOOD IN PLANTATION RUBBER.

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR:

Perhaps this would be a good time to bring up the complaints received from manufacturers because of small splinters of wood found in even the best plantation crêpes.

That some of these splinters are due to the method of opening the boxes at the factories is certain. An axe is generally used, to save time and labor. On the other hand, the splinters are found even in the middle of the packages, and could only have crept in during transportation or re-packing in London.

It would seem that some sort of an inner covering put around the rubber when it is placed in the boxes would not only prevent these splinters from working into the parcel during transportation, but would also keep them out when the rubber is opened at the factories.

Just what covering to use seems to be the serious problem. Possibly some sort of duck or muslin wrapper could be used. I fear that ordinary paper would tear, or if by any chance it should become wet would work into the rubber and be almost as hard to get out as splinters.

If the planters could see the condition of the rubber on arrival they would—if they do not already—appreciate the necessity for some measures being taken. Needless to say, when the

rubber leaves the plantations it is clean and packed in boxes which are most carefully made and smooth on the interior.

It seems a shame that one of the great advantages of plantation rubber—that it can be put into the compound without being washed and dried—should be many times defeated by these little splinters of wood.

Yours truly,

HAROLD W. FRENCH.

Akron, Ohio.

THE ETYMOLOGY OF THE VERB "TO RUBBER."

TO THE EDITOR OF THE INDIA RUBBER WORLD, DEAR SIR:

"Rubber," the verb, intransitive and also inelegant, meaning to stare with eager and impertinent or naive curiosity, is not one of those gems of our adaptive language which come into being of their own accord. It had a definite origin for which one man is responsible. Thirty years ago New York and other cities were infested with dime museums in which the chief attractions offered to an admiring and discriminating public were various deformed and abnormal human beings—ladies whose avoirdupois was reckoned by the ton, living skeletons whose salary was adequate to their condition, strong men who lifted gigantic hollow dumb-bells, and bearded ladies who wore diamond earrings and were fathers of large families. In their desperate search for new living curiosities they pounced upon some unhappy fat man who had grown thin and whose dermal covering was more than ample for present necessities. He was the "man with a rubber skin" and took his place at once as a star of equal magnitude with others of his particular galaxy.

But dime museum men are not the only ones who have a hard hunt for material. Writers and artists also are sometimes put to it in their effort to meet the public taste for something new. So, about 1887, an artist on "Puck," taking the cue from the dime museum, produced a series of pictures of the man with a rubber neck, whose adaptable cervical anatomy proved useful to its owner in various and sundry ways. It caught the public fancy, and when in crowds people were tiptoeing and using their efforts to peer above the heads of the front row contingent they were good-humoredly asked if they did not "wish they had a rubber neck like that fellow in 'Puck.'" Soon the origin was lost and "rubber-necking" took the place of "craning," a perfectly respectable word which was once a humorous reference to the bird whose neck is its chief stock in trade. Americans have to save time, so the extra syllable was soon dropped from the verb, being retained in the substantive which now finds its chief use as an adjective compound when attached to the wagon which gets back to the beginning and rolls on rubber wheels undreamed of at the time the melancholy artist produced his first picture of the man with a rubber neck.

New York, May 20, 1914.

T. M. U.

RUBBER MATS FOR THE SAFETY OF WORKMEN.

Operatives employed in woodworking operations often have to contend with a very slippery condition of the floor—because of sawdust and fine shavings—around saws, shapers, jointers, and other similar machines. It is obvious that such a condition is a very dangerous one, as a slip or fall on the part of a workman is likely to end in disaster. To obviate this danger those who are interested in the safety of workmen recommend the use of rubber mats to cover the slippery spot where the workman has to stand, and this simple but most salutary device is being introduced into many plants.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will receive bids until June 16 for furnishing gum and rubber gasket; schedule 6,785. Report No. 1,787.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

ASBESTOS AND RUBBER

It has been suggested that I should say something about the association of asbestos and rubber in British factories concerned with the production of goods composed of the two materials. This is a case where detailed treatment would involve giving more minutiae as regards the individual firms concerned than I feel at liberty to give. One may, however, be permitted to give briefly the salient features concerning the information asked for. It is probably correct to say that all our asbestos works do a certain amount of rubber manufacturing and that practically all our rubber works which make mechanical goods use more or less asbestos. In the first case the rubber is a minor department of the business, and in the second case the asbestos is a side line, so to speak. The goods manufactured in both cases belong generally speaking to one class which may be roughly designated as steam and engine packings.

In some cases the rubber works after proofing the asbestos sheeting with a dough of a cheap quality make up the sheet into the finished packing in the desired form, and in other cases the proofed asbestos is sold to other firms which make up the packings and put them on a highly competitive market under their own or some trade name. Since the amalgamation of the United Asbestos Co. and Balli Asbestos Co. into Balli United Asbestos Co., the rubber side of the business has all been carried on at the Harefield Works, Middlesex. Messrs. Turner Brothers, Limited, of Rochdale and Manchester, are the principal competitors of the above concern. In addition to the ordinary asbestos-rubber packings Messrs. Turner have in recent years done a large business in Permanite, a high pressure jointing material.

THE DOUGHTY PATENT VULCANIZER

Altho the patent for this machine expired three years ago, and its use is therefore open to any tire manufacturing firm, it is a fact that it is still practically a monopoly of the Dunlop Rubber Co., its original owners in this country. When Mr. Doughty, an American, offered his patent for sale in England his price was £100,000, at which figure there were no buyers. Eventually, however, a Birmingham gentleman obtained it at a figure which left a handsome profit in resale to the Dunlop Co., for, I understand, £80,000. The machines have not been imported from America, but have been made in Birmingham and Manchester. For those not acquainted with the topic I may say that the object of the machine is the rapid cure of tire covers and inner tubes at a high temperature, the usual figures for tire covers being 3½ minutes at 160 pounds steam pressure. The machines are tested by steam, 350 pounds pressure, and hydra tested to 1,200 pounds per square inch. It is understood that there are 350 of these machines in the Dunlop works at Birmingham. I may say that the machine for vulcanizing inner tubes is of quite a different type from the machine for covers. An important point with regard to the successful use of the machine is the composition of the rubber, and this is the particular rock on which other firms which installed it when the patent ran out have struck. For satisfactory results it is necessary that the rubber be of a certain standard, from which any deviation will give rise to trouble and loss.

GORTON RUBBER CO.

The negotiations for the private sale of the Droylsden works of this company, now in liquidation, having proved unsuccessful, a piecemeal sale by auction took place on the premises on April 30. A satisfactory number of buyers assembled, tho the proceedings lacked the animation which characterized the sale at the Gorton works of the company a month earlier, when, to use

the expression of a machinery manufacturer, "buyers went mad." This difference may be accounted for by the fact that whereas at Gorton there was a large amount of quite new and up-to-date machinery, at Droylsden practically all the plant was old. The stock of raw rubber on hand fetched very good prices, a lot of *Hevea* crêpe (no further particularization) being knocked down for 2s. 6d. per pound, which called forth the *sotto voce* remark from a man present that he could buy the same stuff in the market at 2s. 4d. per pound.

THE FORD MOTOR CAR CO.

This concern, which is located in Trafford Park, Manchester, after having announced that its profit-sharing scheme would not be extended to the Manchester works, has now reversed its decision. The payment of a minimum wage of £3 per week is very shortly to take effect, and it is not surprising therefore that the works have been besieged by would-be employes, many of whom possess no qualifications for the work they are anxious to undertake. The new move has naturally excited a good deal of comment among other employers of labor who are not making the large profits of the Ford company and who cannot afford to emulate their example, whatever their philanthropic ideas may be. In conversation with other manufacturers I find that the opinion exists that difficulties will arise with the highly paid men on the score of the supervision—"grandmotherly" they term it—to which they must conform in their method and standard of living. The rules and regulations associated with the receipt of the high wage, tho on their face of an entirely salutary nature, will be found irksome by the free-born Briton, it is said, and it is surmised that many will prefer to do without the bonus in order to retain their freedom of action as to their method of living. The situation is an interesting one and I shall watch developments with a view of reverting to the topic on a future occasion.

SOLID TIRE MANUFACTURING.

This is a branch of the rubber business which is displaying great activity at the present time, more especially in the number of firms which have recently taken it up and among which may be mentioned Henley's Telegraph Co., the Harboro Rubber Co., the Perivale Rubber Works and Redfern's Rubber Works. Of course I am not mentioning firms which have already made their names well known in the solid motor tire world. The advent of some of the smaller firms into the business may have had some effect upon prices, but it may be taken that the 50 per cent. reduction in prices in the last year or so has been mainly due to the combined causes of cheap rubber and close competition among the old-established concerns.

THE LATE MR. R. K. GRAY

Many expressions of deep regret have been evoked by the death of Robert Kaye Gray, who for a period of 44 years was prominently connected with the India Rubber, Guttapercha and Telegraph Works, Limited, of Silvertown, London. Mr. Gray was prominent as an electrician, having been president of the Institution of Electrical Engineers; and in private life he was well known in connection with various scientific and educational institutions. He was altogether a man of note apart from his purely business attainments, which, it is recognized by his late colleagues, bore so important a part in the development of the large Silvertown concern.

THE COAGULATION OF *HEVEA* LATEX

A paper, the full title of which was "On the Coagulation of the Latex of *Hevea Brasiliensis* and Its Bearing on the Strength of Rubber," by Newton W. Barritt, B. A., of the International Institute of Agriculture, Rome, formerly Economic Botanist, Fed-

erated Malay States, was recently read, or rather submitted—the author not being present—before the Manchester section of the Society of Chemical Industry, and is to be found in full in the society's journal for March 31. It was announced by the chairman that those rubber experts who had assembled would have the advantage of reading the paper in the journal before the discussion, which would take place at a future meeting which was to take the form of a rubber evening. So far, I may say, no notice has been given of this rubber evening.

With regard to the paper perhaps a few words by way of a summary of its contents will prove acceptable to those who have not much time to study contemporary literature. The author's object is to find out the causes for the difference in strength between Brazilian and plantation rubber, it being clear from his general remarks that he accepts the manufacturers' statement as to the superiority of the wild product, while he discounts the experimental work of those who aver that the difference exists in imagination only. With respect to the Brazilian curing process he attaches considerable importance to the evaporation of water and the consequent increase in concentration of the serum as a factor influencing coagulation. The part played by the protein was undoubtedly of importance. The idea that cleanliness of the rubber had much to do with quality was a mistake common with planters.

The experimental work carried out by the author consisted in treating a large number of samples of latex in test tubes with varying proportions of standard solutions of acid and salt of various kinds. The water-absorbing capacity of the protein was also determined. The results obtained support the results published by others that the protein constituents play an important part in coagulation and determine to a considerable degree the physical properties of the rubber. He thought that the high concentration of salt and protein in the Brazilian process determined the superior qualities of the rubber and that the dilution of latex by water and acid solution was largely responsible for the inferiority of plantation rubber. This artificial dilution of the latex would result in considerable variation in the rubber produced from day to day. He argued that if dilution of the latex lowers the quality of the rubber, increasing the concentration of salts or protein in the latex should improve the rubber. Samples of rubber coagulated in the presence of varying concentration of salts have been prepared and manufacturers' tests of these samples are now in progress and will be published as soon as available. The author is sufficiently modest to defer expressing any opinion as to the value of his method until the practical tests are concluded, and it may be assumed that he himself is certainly not the only one who will await the result with interest.

RUBBER OVER-PRODUCTION FROM AN ENGLISH STANDPOINT.

A German estimate lately placed this year's production of plantation rubber at 84,000 tons, and the world's aggregate for 1914 at 145,000 tons, with an anticipated consumption of 115,000 tons. Commenting on these estimates, the "Financial Times" of London remarks: "If this assumption should prove to be correct, an over-production of 30,000 tons would have to be reckoned with, so that the maintenance of the present level of prices would hardly be expected."

THE ENGLISH SCRAP RUBBER MARKET.

During April the opinion prevailed in the London market that lower prices for scrap rubber would be needed for inducing transactions of importance. It would seem that the spring collections have been on a larger scale than last year. Garages, which in April, 1913, had 3 to 4 tons to sell, find this year they have twice that quantity, and are much surprised at being able to get only about half of last year's prices. Large parcels of anti-skid covers have been offered from Germany at low rates.

Bicycle tires have maintained their prices, probably because collections have not been large owing to the low quotations.

THE LONDON RUBBER EXHIBITION.

THE Fourth International Rubber and Allied Industries Exhibition will be formally opened at the Royal Agricultural Hall, London, at 3 p. m., June 24, by His Royal Highness Prince Arthur of Connaught. To be sure there will be a press function on the preceding day, but the formal opening of the big show will be as above described. Mr. Manders, the organizing manager of this undertaking, as he has been organizing manager of its three successful predecessors, wrote some time ago to the various associations and institutions connected with the rubber industry in all parts of the world stating at what hour the opening ceremony of the exhibition would begin and asking them if at that particular hour, whatever time of day it might be in their part of the world, they would not get their various members together and wish success to the rubber industry throughout the world.

Mr. Manders, who speaks from the fullness of experience, promises to visitors and exhibitors the best rubber exposition which has yet taken place. Great efforts have been made to have this as comprehensive as possible and to show every phase of this vast industry. There will undoubtedly be the best display of plantation rubber which has yet occurred; for this reason, if for no other, that the plantation feature of the industry is now so much farther advanced than it was at the time of the last show two years ago. And there will also be a wonderful display of manufactured goods. One company alone will show five hundred distinctly different rubber articles made in its factory.

A WEALTH OF TROPHIES AND PRIZES.

An unprecedented number of trophies will be presented on that occasion for excellence in the various branches of this industry. There will be silver cups and gold medals and silver medals, and money prizes—some of them amounting to 100 guineas—for superiority in a great variety of departments, as, for instance: For the greatest variety of articles for commercial use made from rubber; for the best exhibits of rubber flooring; for the best suggestions for new uses of plantation rubber; for the best arrangement of a rubber factory; for the best exhibit of a manufacturing machine; for the best samples of plantation rubber; for the best exhibit of wild rubber; for the best essays on a rubber estate factory; for the best collection of photographs illustrating all departments of rubber estate work, and for excellence in various other departments of planting and manufacture.

IMPORTANT PAPERS AT CONFERENCE.

Jointly with the exposition there will be a rubber conference, at which many valuable papers treating of every phase of the industry will be read by men of acknowledged authority in their particular departments. These papers will be collected and printed in book form.

A NUMBER OF RUBBER MOVING PICTURE SHOWS.

One feature which will interest not only those connected with the rubber industry but especially the casual visitor will be a number of moving picture shows, which may be seen at certain hours during each day in different halls connected with the main exhibition hall. These moving picture displays will show the gathering of rubber in Brazil, the production and preparation of rubber on the plantations and the process of manufacture in some of the large British mills.

THE INDIA RUBBER WORLD WILL BE THERE.

There will be a number of American exhibits, the most important of which—not, to be sure, in size and scope of display but in point of interest to this particular publication—is that of THE INDIA RUBBER WORLD. This will be found at a middle point along the left wall of the building and on the passageway leading to the conference room and also to the club room—a very

convenient place, as those who attend this exhibit may properly be divided into two classes—those in search of the conference room and those in search of the club room—and both will find our booth directly on the way.

THE UNITED STATES RUBBER RECLAIMING EXHIBIT.

Among the notable American exhibits must be mentioned that of the United States Rubber Reclaiming Co., of New York. This company has taken ample space and will give a remarkable exhibit of the reclaiming industry as it is carried on in this country. Samples of reclaimed rubber adaptable to every branch of the rubber industry will be shown, and in order to demonstrate the working characteristics of this class of rubber mills will be in operation. The English manufacturer will undoubtedly be much interested in seeing reclaimed rubber sheeted in any degree of thickness from one-half inch to the very thinnest tissue without the addition of any crude rubber or mineral ingredients. Moreover, there will be apparatus in operation for the testing of rubber chemically, physically and electrically. Some of these machines have never before been seen on the other side. There will also be samples of almost every form of goods (boots, shoes, clothing, tires, wires, etc.) in which reclaimed rubber can be advantageously used. Mr. L. J. Plumb, who has spent many years in the study of vulcanization and devulcanization, will be in general charge of this exhibit and will be able to give inquirers all possible information.

THE RUBBER GROWERS' ASSOCIATION.

The Rubber Growers' Association, of London, invites American visitors to call at its booth and register their London addresses so that they may be included in the general arrangements for the hospitality which this association will extend to visitors during the exhibition, and the association expresses the desire to be of any service whatever to rubber men in London at that time.

ALDEN'S SUCCESSORS, LIMITED.

A new company, Alden's Successors, Limited, has been established at 24 and 25 Great Tower Street, London, to carry on business as rubber importers and merchants in London and Liverpool, and has acquired the whole of the shares in A. H. Alden & Co., Limited. The company has also acquired an interest, to the extent of 75 per cent. of the shares, in Adelbert H. Alden, Limited, of Para and Manaos. The company has an authorized capital of £100,000, of which £60,000 has been issued and is fully paid up in cash. Wm. H. Hildreth, E. Stevenson (directors of A. H. Alden & Co., Limited) and R. Bolten, manager of the rubber department of Bunge & Co., London, will be joint managing directors of the organization.

RESULTS OF GERMAN RUBBER MANUFACTURING COMPANIES.

A statistical return shows that of 29 German rubber companies with a total nominal capital equaling \$17,300,000, 17 are either paying no dividends or are in liquidation. The accounts for 1913 being in many cases still open, the rates paid in 1912 will serve for comparison.

Of the twelve more prosperous companies, the Continental takes the lead with 45 per cent. for the three last years, Ph. Penin 25 per cent. for 1912; Excelsior 25 per cent. for 1910, 1911 and 1912, and 18 per cent. for 1913; Müندن-Hildesheim and Mannheimer each 10 per cent. The other seven range from 4 per cent. to 7 per cent.

The limited profits in some cases are attributed to the heavy expense of installing machinery and molds for the manufacture of automobile tires. This last-named article, moreover, has been the object of keen competition between French and German makers, while business was likewise affected by the fluctuations in the rubber market.

COMMERCIAL ORGANIZATIONS IN GERMANY

According to a bulletin lately issued by the Bureau of Foreign and Domestic Commerce at Washington, Germany has two distinct classes of trade organizations. Federal legislation deals with the trade and commerce of the empire regarding specific industries, while the chambers of commerce are regulated by the various states, differing considerably in functions, authority and constitution. There are more than 150 chambers of commerce in Germany, 90 of which are in Prussia, 8 in Bavaria, 8 in Wurttemberg, 9 in Baden, 8 in Saxony, 7 in Hesse, 7 in Alsace-Lorraine, and the remainder in other parts of the empire.

Besides the organizations including all the business men of a district, there is the chamber of commerce in the stricter sense of the word, resembling a board of directors. Of the chambers of commerce 33 have their own buildings.

ALLEGED POISONING AT RUSSIAN RUBBER FACTORY

Attention has been aroused in Europe by the illness which recently attacked the workers of the "Trüegolnik" rubber factory of St. Petersburg, which was at first attributed to inferiority in the benzine used or to changes in the varnish employed. Those hypotheses were found to be groundless, as no change had been made for years in the benzine, nor in the mode of using it. The "Trüegolnik" company has called attention in the European press to the fact that the sickness first appeared at the "Prowodnik" works, Riga, and later in the Trüegolnik factory at St. Petersburg. A few days afterwards it broke out at some ten other plants in various lines.

For the investigation of the origin of this illness a special committee of doctors was appointed, who at first were of the opinion that it arose from the inhalation of benzine, but when it was taken into consideration that cases had occurred in factories where no benzine was used they arrived at the conclusion that it was of a nervous character.

In reviewing the question Dr. Fritz Frank and Dr. Edward Marckwald of Berlin, express the opinion that while the illness took the form of fainting and suffocation, such attacks could not have been caused by benzine, particularly if the needful precautions had been taken for ventilation and for the absorption of the gases. A final verdict depends on the result of further investigations.

FRENCH IMPORTS AND EXPORTS OF RUBBER MANUFACTURES.

Statistics for 1913 show French imports in belting, hose, valves and other mechanical goods of rubber combined, or not, with fabrics or other materials, to have been 1,314 tons, value equal to \$2,365,000. French exports under the same classification were 1,509 tons, value \$2,935,000.

Imports of rubber thread (vulcanized) in 1913 were 197 tons, value \$786,800.

Imports of elastic fabrics in 1913 were 90 tons, value \$398,200, exports being 144 tons, value \$587,200.

Imports of piece goods in 1913 were 56 tons, value \$146,200, and exports 35 tons, value \$90,600.

Imports of dress shields for 1913 were 21 tons, value \$100,800.

Imports of braces, garters and hose supporters for 1913 were 6 tons, value \$32,600.

Imports of card clothing for 1913 were 26 tons, value \$52,400, exports being 3¼ tons, value \$7,800.

Imports of rubberized clothing for 1913 were 34 tons, value \$150,400, exports being 84 tons, value \$394,200.

Imports of rubber footwear for 1913 were 153 tons, value \$245,200, exports being 66 tons, value \$100,400.

Imports of tires for 1913 were 1,310 tons, value \$4,976,800, exports being 4,993 tons, value \$17,826,000.

The Hackethal Wire Co., Hanover, has declared a dividend of 16 per cent. for 1913, as compared with 14 per cent. for 1912.

International Rubber Congress and Exhibition at Batavia.

THE INDIA RUBBER WORLD'S NEW SILVER CUP

THE photographic reproduction shown below gives some idea of the silver cup offered by THE INDIA RUBBER WORLD to be presented at the International Rubber Congress at Batavia next September for the best method of extracting gutta percha. The cup is of solid silver, heavy, gold lined and stands 13 inches high and is 13 inches across, including the two handles. It rests upon an ebony pedestal, and its height including the



THE INDIA RUBBER WORLD CUP FOR THE BATAVIA EXHIBITION.

pedestal is about 20 inches. As the illustration shows, it is a handsome trophy, and it will undoubtedly be competed for with a great deal of zest. The face of the cup has an embossed design showing gutta percha leaves on the two sides, between which is the following inscription: "The India Rubber World Trophy for the Best System of Extracting Gutta Percha. International Rubber Exhibition, Batavia, Java, 1914."

The date appointed for this year's Batavia Rubber Congress and Exhibition is now sufficiently near to allow of definite arrangements being made for both events, the former lasting from September 7 to 12 and the latter running from September 8 to October 10. Thus during the first week of the exhibition it will be taking place concurrently with the Congress.

As those most interested in the subject of rubber will in many cases be paying their first visit to Java, they will appreciate the "Guide to Visitors" published by the exhibition authorities, a copy of which has come to hand. This interesting handbook contains a number of artistic illustrations showing the main exhibi-

tion buildings, the official tourist bureau and various scenic features of the island of Java, which will be new to many readers. It likewise includes plans of Batavia, as well as of the exhibition grounds and buildings and a view of old Batavia.

OFFICIALS AND COMMITTEES.

Among the principal government officials are: The Prince of the Netherlands (Patron); the Dutch Ministers for Foreign Affairs and the Colonies and the Governor General of Netherlands India (Honorary Presidents); H. J. Lovink, Director of Agriculture (Government Commissioner). The chief local officials are: Major-General (retired) J. G. H. de Voogt, president of Executive Committee; T. Ottolander, first vice-president; Dr. W. R. Tromp de Haas, second vice-president; J. Lieftinck, LL. D., secretary general, and A. F. Marmelstein, president of Finance Committee.

The exhibition jury will consist of five sections, embracing the following subdivisions: Section 1, botany, diseases, literature and scientific testing methods; section 2, cultivation, tapping and preparation; section 3, wild rubbers, substitutes and gutta percha; section 4, economy, trade and statistics; section 5, vulcanized caoutchouc. It is of interest to note that Dr. Tromp de Haas, whose name is well known as a rubber expert, will preside over the second section, dealing with cultivation, tapping and preparation.

Influential committees have been formed in Holland, England and Australia, as well as at Singapore and Bangkok. The English committee includes Professor Dunstan, as well as Messrs. S. Figgis, Arthur Lampard, Herbert Wright and Hamel Smith; while on the Netherlands committee are J. F. de Beaufort, president of the Amsterdam Society for the Rubber Trade; A. G. N. Swart, LL. D., and E. Joosten, of Joosten & Janssen, Amsterdam. Leon Osterrieth, of Antwerp, has been appointed delegate for Belgium.

SUMMARY OF PAPERS

Accompanying the guide book is a summary of the papers in preparation for the Congress, either to be read or included in the official summary to be issued as a souvenir of the occasion. These papers, about eighty in number, are divided into the general heads



OLD BATAVIA.

of Botany and Phytopathology (13 papers), Climate and Soil (3 papers), Cultivation and Tapping (21 papers), Preparation and Chemistry of Rubber (24 papers), Wild Rubber (8 papers),

Economical Questions and Commerce (1 paper with 4 subdivisions).

While the full program of the Congress is to be published later, the summary states that addresses will be delivered by some well-known authorities, a definite agreement having already been made.

Among the speakers who will deliver addresses are: Prof. F. Went, Utrecht; Henry C. Pearson, editor of THE INDIA RUBBER WORLD, New York, and Prof. Edwin Baur, Berlin. The subject announced for Mr. Pearson's address is: "What Manufacturers Desire in Crude Rubber."

EXCURSIONS.

It is intended during the week following the Congress, that is, September 12 to 19, to organize several excursions to well-known rubber estates in West Java, including a visit to the government Botanical Gardens. Besides estates planted with *Hevea*, others where *Ficus* is growing will also be visited. This matter is in the hands of a local subcommittee.

The program will be replete with interesting features of much importance to the rubber industry.

PRELIMINARY PROGRAM OF THE BATAVIA RUBBER CONGRESS.

THE preliminary program of the International Rubber Congress to be held at Batavia, Java, from September 7 to 12 of the present year is a notable one. This program, copies of which may be obtained on application to Dr. A. A. L. Rutgers, second secretary of the Congress Committee, Buitenzorg, Java, and mention of which was made on page 385 of our April number, is given below:

MONDAY, SEPTEMBER 7: Address by Prof. F. A. F. C. Went, of Utrecht University, on "Science and Tropical Cultivation."

Address by Henry C. Pearson, New York, on "What Manufacturers Desire in Crude Rubber."

TUESDAY, SEPTEMBER 8: Address by Prof. Erwin Baur, of Berlin University, on "The Progress of Investigations as to Heredity and Their Importance for the Raising of Tropical Cultivated Plants, Particularly of Rubber Plants."

Discussion on "Selection of *Hevea*." Introductory paper by Dr. P. J. S. Cramer, Buitenzorg.

Discussion on "Diseases and Pests of *Hevea*." Introductory papers by Dr. C. J. J. van Hall, Buitenzorg; Dr. A. A. L. Rutgers, Buitenzorg, and A. Sharples, Kuala Lumpur.

WEDNESDAY, SEPTEMBER 9: Address by Dr. Schüffner, of the Medical Institute, Medan, Deli, on "Hygienic Measures."

Discussion on "Catch Crops and Intercrops." Introductory papers by Dr. Th. Wurth and Dr. P. Arens, Malang, Java; Dr. C. J. J. van Hall, Buitenzorg; Dr. J. W. Gallagher, Deli, Sumatra, and R. W. Munro, Morib, Selangor.

Discussion on Planting Distances and Thinning Out." Introductory papers by C. M. Hamaker, Kiara, Pajoeng, Java, and the Hon. E. B. Skinner, Kuala Lumpur.

Discussion on "Artificial Fertilisers and Green Manures for *Hevea*." Introductory papers by Dr. A. W. K. de Jong, Buitenzorg; Mr. Callandar, Kalthur, Ceylon; M. Barrowcliff, Kuala Lumpur, and F. G. Spring, Kuala Lumpur.

THURSDAY, SEPTEMBER 10: Discussion on "Tapping and Tapping Systems." Introductory papers by Dr. A. W. K. de Jong, Buitenzorg, and F. G. Spring.

Discussion on "Preparation of Rubber." Introductory papers by Dr. A. J. Ultée, Djember, Java; B. J. Eaton, Kuala Lumpur; Stafford Whitby, Kajang, and Sydney Morgan, F. M. S.

Evening address on the "Collection of Rubber in Brazil," by Dr. P. J. S. Cramer, Buitenzorg.

FRIDAY, SEPTEMBER 11: Discussion on the "Reduction of Cost Price of Rubber." How to realize it. Introductory papers by E. A. O. Vervooren, Bandoeng, Java, and E. Macfadyen, F. M. S.

Demonstration of the "Scientific Methods of Rubber Testing," on the Exhibition grounds, by B. J. Eaton, Kuala Lumpur, Prof. G. van Itersen and J. G. Fol, Delft, Holland.

SATURDAY, SEPTEMBER 12: Address by J. G. Fol, Delft, on "The Results on Scientific Testing of the Empirical Appreciation of Raw Rubber." Discussion on "Methods of Testing Raw Rubber."

Introductory papers by J. G. Fol, Delft; B. J. Eaton, Kuala Lumpur, and Dr. W. R. Tromp de Haas, Buitenzorg.

AMANI AGRICULTURAL INSTITUTE GERMAN EAST AFRICA.

This institute made considerable additions to its plantations during the year 1912-1913; this development allowing of an enlarged distribution of seeds and plants. As the cultivation of *Manihot* does not seem to have been successful, the demand for seeds of that variety has fallen off.

On the other hand, *Hevea Brasiliensis* has been developed in a very satisfactory manner, producing an abundance of seeds, which, as well as plants, were freely distributed.

Kickxia elastica grew well, but the demand for seeds exhibited a falling off. *Ficus elastica* showed good development, but only the small-leaved variety coming from Sumatra is available for rubber. The older *Castilloas*, which yielded an inferior rubber, have been to a great extent cut down and the land used for the cultivation of other varieties.

Rubber vines have been planted at Amani, where the large-leaved varieties have thriven better than the small leaved, which only produce a limited amount of foliage after five years.

The various kinds of *Palaquium* (gutta percha) have made fair progress, but there has been no marked increase in quantity, as there was no propagation by slips.

WASHING LOSSES ON EAST AFRICAN RUBBER

The report of the Biological Agricultural Institute, Amani (German East Africa) for the year 1912-1913, states that various samples of *Manihot* rubber mostly came for testing as to loss in washing, the investigation of chemical composition not being a matter at present required. One sample from Ujdjidi showed loss in washing 21.6 per cent., resin 10 per cent. and albumen 4.6 per cent.: being somewhat high in resin, but otherwise normal. Scrap rubber from Morogoro showed loss in washing 27 per cent., while balls from the same source gave losses of 37.8 per cent., and 34.6 per cent. The balls showed traces of larvae deposited by a moth.

RUBBER IN SOUTHERN KAMERUN.

From the annual report of the Hamburg Association of West African Merchants, it would seem that the fall of rubber has led to a collapse of the economic life of Southern Kamerun, which is wholly dependent upon the production of rubber. Business was in many instances arrested or restricted. It is anticipated that the development of the colony will be set back for years.

The government has expressed its readiness to convert the export tax of about 5 cents per pound into a graduated tax, according to value. At the same time no duty would be levied when the market price did not approach a remunerative basis.

PROPOSED AMALGAMATION OF SOUTHERN INDIA COMPANIES.

Recent advices from London report negotiations for the amalgamation of three Southern India companies, the Travancore, Orkaden River and Paloor. Their respective capitals are £40,000, £25,000 and £40,000, their areas being 1,738, 779 and 474 acres.

The three properties together would, it is considered, form a complete and compact estate. Another advantage would be that the amalgamation would open a market for the shares of the companies, which are individually too small for that purpose.

THE WORST OVER.

In the view of the "Financial Times" of London, recently expressed, rubber has seen its worst days. It is added that the price may ultimately reach 1s. 6d. (36.49 cents) with a less disastrous effect on plantation companies than when it went down to 2s. (48.65 cents) in September last. Remarkable economies have been made in working costs, while allowances to reserve and depreciation funds have taken a prominent place. Conservatism is also being shown in restricted tapping and in greater attention to questions of preparing rubber; all tending to the establishment of the industry on a sound financial basis.

Some Rubber Planting Notes.

DIRECT RUBBER SHIPMENTS FROM MALAYA TO NEW YORK.

IN THE STATEMENT mentioned in Malaya as to the permanence of the service between Port Swettenham and New York, inaugurated at the end of March by the steamer *Indradeo*. In discussing this subject the "Malay Mail" remarks that if the advantages of direct shipments are as great as represented certain of the plantation companies will doubtless be found anxious to avail themselves of this method of getting their rubber to New York. With the increasing Malayan production, any means of broadening the market would be of great value.

POSSIBLE REDUCTION IN F. M. S. RUBBER EXPORT DUTY.

A rumor current in the Federated Malay States is to the effect that the government is considering a proposal for a reduction in the present rate of rubber export duty (now $2\frac{1}{2}$ per cent.), whenever the article falls below a certain price.

RUBBER SECTION AT PENANG CHAMBER OF COMMERCE.

In the May issue (page 451) the establishment of the "Singapore Chamber of Commerce Rubber Association" was referred to. A similar association is reported to have been formed at Penang, though that port only shipped last year about 20 per cent. of the total from Malaya, against about 40 per cent. each from Singapore and Port Swettenham.

COLOMBO AND SINGAPORE THE FUTURE RUBBER MARKETS.

At the last meeting of the Chersonese (F. M. S.) Estates, Ltd., Mr. Noel Trotter, the chairman, dwelt on the present tendency to sell rubber in the East which might otherwise come to London, and thus avoid the heavy charges at that port. These conditions would accelerate the arrival of the time when Singapore and Colombo would become, as he believed they would, the most important rubber markets of the world. This question would, he anticipated, have to be dealt with by the sterling companies when their financial conditions become more settled.

A PAPUAN PLANTER ON RUBBER.

Mr. Carl Etting, manager of the Dedele plantation, East Central Division, Papua, recently visited Ceylon, spending a short time at Peradeniya. The special object of his visit was to obtain information about a root fungoid disease of the coconut palm, which had appeared in Papua.

He stated that while there are a few thousand acres in Papua under Pará rubber, planters have gone in more for coconuts. Rubber has done well, however, on the Seguera plantation opened by Mr. Ballantyne, retired treasurer of Papua, about seven years ago. The plantation is at an elevation of about 2,400 feet, the trees showing a wonderful growth, and being interplanted with coffee. Coconut cultivation seems to be in the ascendant in Papua.

SYSTEMATIC TROPICAL AGRICULTURE.

In commenting upon the fact that the development of systematic agriculture was earlier in temperate regions than the tropics, the "Journal of the Jamaica Agricultural Society" remarks that more has become known within the last few years as to the cultivation, tapping and curing of rubber than was ever known before.

While the closest attention has been paid to Pará rubber, there is little definitely known about the *Castilloa* tree, processes of tapping it being of an experimental character.

CEYLON COMPANY REGISTRATION.

The report of the Registrar General of Ceylon for the period

from July 1, 1912, to December 1, 1913, shows the registration within the period named of 23 companies, with an aggregate capital equalling \$6,576,300. At the date of the report, 221 companies were on the register, of which six were in process of liquidation.

Applications were received during the period named for the registration of 192 trade marks in 238 classes. Of these 168 were granted.

DUNLOPS INVESTIGATING CEYLON CONDITIONS.

A group representing the Dunlop Rubber Co., including Messrs. Worthington (technical expert of the company), Hughes and Moesinger, recently passed several weeks in Ceylon. Their object was to learn how rubber was prepared. Before leaving for home they expressed the opinion that the less rubber was treated the better. In Mr. Hughes' view, were it possible to obviate the treatment of the article (practised largely to secure the higher price obtainable for clean rubber) it would be possible to get a fairly standard quality.

With regard to the company's estate at Bibile, they are not going to install machinery until quite certain of what is wanted. As to the various patent methods of curing, Mr. Hughes expressed satisfaction with the rubber turned out, but he was dubious as to their capacity for dealing with the production of large estates of, say, a couple of thousand acres or so.

The Dunlop company has opened a branch at 14 Baillie street, Colombo, where a stock of tires as well as of golf balls will be carried.

ASSISTANT RUBBER EXPERT FOR CEYLON.

At a recent conference, held at Colombo, of local members of the Rubber Growers' Association, the Rubber Research Committee and certain government experts, it was decided to bring out a physiological botanist to help Mr. K. Marsden in rubber research. This decision was reached on the suggestion of Mr. R. N. Lyne, Director General of Agriculture.

EDWARD VALENTINE CAREY.

Much regret has been expressed at the death in England of Edward Valentine Carey, formerly of Ceylon, but for more than 20 years interested in the Carey and Jugra estates, two prominent Straits companies, of which he was the chief promoter.

COMPARISON BETWEEN CEYLON AND STRAITS CONDITIONS.

In a comparison between the present situation of rubber cultivation in Ceylon and Malaya, Mr. Joseph Fraser, the well-known visiting agent, has reported that the best yields he found in 1913 were in the F. M. S., where two fields aggregating 134½ acres gave respectively 740 and 631 pounds per acre. The average yield of the estate was 418 pounds per acre, produced at a cost of 7 pence sterling (14.19 cents) per pound; this being the lowest cost he knew of in the F. M. S., which fact he commended to the notice of Ceylon planters. In this calculation no allowance is made for upkeep of immature areas and capital expenditure.

DUTCH PLANTER DISCOVERS PROCESS OF RESTORING TACKY RUBBER.

A process has been discovered by Mr. J. Kooij, an assistant at the Branggah Banaran rubber estate, near Wlingi (Java), for restoring tacky rubber to its normal condition. The samples are being sent to Professor Iterson of the laboratory at Delft (Holland), to find whether they are vulcanizable.

BRAZIL CONTINUES PREFERENCE TO AMERICAN RUBBER GOODS.

BY the decree of January 17, 1914, Brazil continues for the current year the preferential tariff reduction of 20 per cent. on all rubber goods imported from the United States. Below is the regular Brazilian tariff schedule on rubber goods manufactured in the United States, to which this reduction applies.

BRAZILIAN TARIFF ON RUBBER GOODS.

From which 20 per cent. is to be deducted during 1914.

Equivalents.

Milreis (1,000 Reis), (gold), 54.6 cents; Paper, 32.4 cents; Kilo, 2.2 lbs. (Duties on most articles payable 65 per cent. in paper and 35 per cent. in gold.)

Description of goods.	Full duty per kilo centage gram, of duty in Reis.	Per-centage of duty levied.	Tare allowance.
Manufactures of rubber, gutta percha, vulcanized or not—			
Funnels, capsules and bottles..	2,600	50	Cases or boxes of cardboard, or similar packages, gross.
Sticks, whips and similar articles	5,000	50	do.
Tobacco pouches, tips of walking sticks and match box covers	4,000	50	do.
Dolls, toys and similar articles	3,500	50	do.
Buttons of all kinds.....	4,000	50	do.
Footwear	3,000	50	do.
Machine packing	1,000	50	do.
Combs, rulers and penholders.	4,000	50	do.
Fans, each	3,000	50	do.
Belts, braces, garters, cords, ribbons and plaits—			
Covered with pure or mixed silk	30,000	50	With the exception of cardboard cases, gross.
Covered with any other material	7,000	50	Cases or boxes of cardboard, or similar packages, gross.
Preparation or composition for artists	3,200	50	do.
Bracelets, earrings, lockets and other articles of adornment.	10,000	50	do.
Stems and tubes for flowers..	7,000	50	do.
Combined with tissues of cotton, wool or linen—			
In the piece or in cuttings..	4,000	50	do.
In articles not specially mentioned	7,000	50	do.
Combined with tissues of pure or mixed silk			
In the piece or in cuttings..	7,000	50	do.
In articles not specially mentioned	15,000	50	do.
Hose, threads, leaves or sheets	1,200	50	do.
Door mats	1,300	50	do.
Not specially mentioned..... and valances.	50	50	

ENGLISH REPORT ON BRAZILIAN CONDITIONS.

In an official report the British Consul at Pará lately stated that under the stress of the severe competition and cost of collection and transport, it is likely that all but the finest rubber will disappear from the Pará market and that the greatest care will have to be taken in purifying even the best grade. He further remarks that while the Amazon district is one vast forest, the greater part of the wood for export rubber boxes is imported from the United States.

The natural—and only—remedy would be, it is added, to remove every charge of export or other taxes on products leaving the country, and to abolish all import duties on food and other necessities of life.

THE PROPOSED BRAZILIAN LOAN.

According to the Paris financial press, there are three interests concerned in the Brazilian loan of \$100,000,000, now under negotiation in the British and French capitals. These three interests are the Brazilian government, the French banking syndicate and the group of English bankers represented by the Rothschilds. The points which are specially leading to controversy are said to be the request for a special guarantee, and the organization of some form of European control over Brazilian finances. Such a guarantee would, it is considered, depreciate the older Brazilian loans, in which English investors have large holdings.

The Bolivian Congress recently passed a surtax of 15 per cent. on all goods subject to import duty.

RUBBER NOTES FROM DUTCH GUIANA.

By Our Regular Correspondent.

IT is interesting to report that balata produced in the colony from January to March 31, shows an increase of 8,108 kilograms (17,838 pounds) over the production for the same period during 1913. The official records are as follows: Balata production, January to March 31, 1913, 86,775 kilograms (190,905 pounds); same period 1914, 94,883 kilograms (208,742 pounds). The weather has been very favorable for gathering and drying the product during this period and, if conditions are equal, predictions of a record crop this year will without a doubt be fulfilled. The proposed general regulations governing the industry have been published; whether the Colonial States will pass them is a question.

The two largest and most important balata concerns in Dutch Guiana have amalgamated, being represented by C. S. J. Struycken de Roysancour. These concerns are Balata Compagnie Suriname and Balata Compagnie Guyana. The united companies have acquired commodious new offices, where operations on a very large scale will be carried on.

Ter Saag & Co. are reported to have produced last year, by felling of the trees, seven tons of balata. It is understood that most of the trees had suffered almost complete destruction from previous indiscriminate tapping. If this information is correct the company is to be congratulated, for the felling system is certainly unpopular among the majority of bleeders and others. It is also said in balata circles that they have transferred certain of their concessions to a London syndicate.

The Colonial States are considering an attempt to impress upon the mother country the absolute necessity of extending the railroad to the Lawa district, and then perhaps to Brazil. The present railroad starts at Paramaribo, the capital, and terminates at a point called "Dam," on the Sara Creek. If this line were extended to the border of Brazil or even, say, to the Lawa, it would penetrate a region abounding in balata producing trees and wild rubber. *Hevea Guyanensis*. Not alone would the extension of the line benefit the balata industry, but the rich forests of all sorts of timber would be reached that today are practically useless to the country. The gold industry would also receive more attention, for in these regions this precious metal is freely distributed. The development of all this natural wealth would tend to the making of the country, which, from its strategical position on the northern coast of South America, is an ideal land for the capitalist.

Ten years ago, when the Dutch Government at the Hague voted an amount to construct the Hinterland railway to the Lawa district, it was decided to run the line to a point somewhere near the Cie. Des Mines D'or. Had this been done, today there would be little chance of our neighbor, British Guiana, carrying her frontier railway scheme through, for the simple reason that the advantages that colony is about to gain would now have been Dutch Guiana's. British Guiana, governed by a man of constructive ability and a thorough business man, has not been slow to take advantage of the position, and the Dutchman now "wakes up" to a realization of his stupidity.

The despatch of His Excellency, Sir Walter Egerton, to the Secretary of State for the Colonies, published in part in THE INDIA RUBBER WORLD of April—page 386—is a masterful document and shows the writer to be possessed of a large degree of energy, foresight and judgment. The scheme outlined in the despatch is a bold one, but its feasibility is beyond question. To my mind, however, there is an impediment, the consideration of which I shall defer to the latter part of my letter. During the years I have been in French Guiana and latterly in Dutch Guiana, I have been observing

the trend of opinion in relation to railway construction to Brazil, and have discovered that there is a smoldering desire among the colonists which is crystallizing into a determination to be some day connected with Brazil by railway. About two years ago the French firm of Hesse & Co., of Paris, requested and obtained from the Government of French Guiana permission to construct a railway from Cayenne to St. Laurent and thence to the Mini gold fields, which are situated near the southern boundary of the colony. This firm, which is busily engaged at the present moment in making the preliminary survey between Cayenne and St. Laurent, is both wealthy and energetic and being associated with some of the richest men in France can, therefore, find all the capital required if it is decided to carry through this project. In June last I met at Paramaribo a Mr. Alexis Troissart, representative of Messrs. Rothschild, of Paris, who was on his way to French Guiana to study the *pros* and *cons* of railway construction in that colony.

Dutch Guiana has already constructed about a hundred miles of railway, which runs into the heart of the country, and consequently has a start, and a very long one, on the other Guianas. Whether she will take advantage of her costly-bought and premier position is hard to say, but there is a strong under current of opinion, occasionally expressed, that the objective should be Brazil; and the outcome of this may one day be to force the powers that be to turn it into a reality. These Netherlands who are guiding the destinies of Dutch Guiana have for centuries demonstrated their ability to do, having won a country from the ocean by their gigantic engineering constructions, and made it one of the most wealthy and prosperous by their commercial ability. Hence they must not be left unconsidered. Should they decide to undertake such a project it would not be long before it would be carried through.

I may state that Sir Walter Egerton's scheme has met with the admiration of the colonists of the sister Guianas and has given them a feeling of emulation, so that one is likely to see in the near future a healthy rivalry between them as to which will be first to touch the Brazilian frontier with a railway. British Guiana, being in actual possession of a master-mind, only needs the undivided support and co-operation of her people to assure her a good run in what is likely to become a race to Brazil. The impediment referred to above is the diplomatic side of the project. Brazil can make such a project a success or a failure, and it would be taking too big a chance to build such a railway—that is, if the Brazilian-Amazon trade is the *sine qua non* of success—without first coming to some diplomatic arrangement with that country. Nothing in His Excellency's despatch shows that any such present or future arrangement is contemplated, and to me it seems to be of paramount consideration, as the following excerpt from the despatch will show: "At present the city of Manaos only offers a limited and uncertain demand, and a heavy duty shuts out colonial cattle from even that market."

It is far from my intention to enter into any discussion as to whether the development of subsidiary industries and the gold and diamond fields, the establishment of towns and the consequent traffic thus created, the transport of cattle and timber, the exploitation of balata and other forest products, would pay the working expenses and interest on capital within ten, twenty-five, or even a hundred years, but of this I am sure, that were the government to satisfactorily demonstrate to Brazil the incalculable advantages and benefits that would accrue to the many interests engaged in the upper reaches of the Amazon, and thereby gain her co-operation, the success of the project would be assured. One must not forget that there are powerful interests at stake. Pará has been made by the Amazon and only a decade ago the flourishing and

wealthy city of Manaos was built to cope with the increasing river trade. Last, but of considerable importance, is the Amazon Navigation Co., with no fewer than 300 steamers. These vast interests will do all they can to nullify such an enterprise, so as to keep trade in the present channel



LABORER TAPPING BALATA TREE WITH GONGGRIJP'S TAP-HOOK

Perhaps it may be thought that the precaution urged is only the croakings of a pessimistic mind, or the officious endeavor of an outsider to dim the silver lining behind Demerara's dark cloud, now apparently about to pass away. To those so minded let me hasten to give the assurance that as a native of British Guiana—altho a wanderer for years—I appreciate the words "This is my own, my native land," and that my warning is called forth by the desire to see my native land in possession of a flourishing and wealthy enterprise instead of a dearly bought "white elephant."

As will be seen by the above, a railroad to the Brazilian borders is the desire of the three Guianas, and, as Dutch Guiana already has about 100 miles open for traffic, the distance now to be constructed would give her the leading position, especially with the opening of the Panama Canal next year. If the Dutch Government could only be made to realize the benefits to be derived by spending the necessary money in completing this grand enterprise, it would not hesitate to take advantage of the situation and "make hay while the sun shines."

The capital popularly subscribed in the London market during 1913 for the purpose of investment in rubber securities—Indian, colonial and foreign—amounted to \$6,754,435, or \$6,483,395 less than similar subscriptions of the preceding year.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent

THE annual report of Professor Harrison, Director of Science and Agriculture, which has just been issued, contains a record of steady, if slow, progress in the rubber industry. At present it seems that the tapping of the indigenous balata trees offers more attractions to capitalists than the establishment of rubber plantations, in spite of the fact that the heads of the Agricultural Department have publicly announced that there are nine million acres of easily accessible lands in the colony eminently suitable to rubber cultivation. The total number of acres planted is still only 3,139 acres, against 2,259 acres and 1,740 acres for the two years preceding, revealing progress, but not as rapid progress as the suitability of the climate would have justified. Of this acreage, 435 acres are on the west coast of Demerara, 184 acres on the west bank of the Demerara River, 160 acres on the east bank of the Demerara River, 175 acres on the higher reaches of the Demerara River, 914 acres in the Essequibo River district (the larger proportion of which probably belongs to the Bartica Agricultural Estates, Limited, an American corporation), and 665 acres in the northwest district.

POPULARITY OF PARÁ RUBBER. FAILURE OF SAPIUM.

Professor Harrison, dealing with the state of cultivation in his report, says: "The rubber industry continued slowly to expand; 3,139 acres are now under rubber, including at least 2,800 acres of Pará rubber. The quality of rubber was good and the yields satisfactory. The growth of Pará rubber trees was satisfactory where they were planted under suitable conditions. The trees were free from any serious pests or diseases during the year, and were but little affected by the severe drought. The rate of growth was lessened during the drought, but not to the extent anticipated, the plants remaining in a vigorous condition, except in wind-swept situations in the coastal regions. The trees planted out in 1906-7 flowered in many districts in the colony and supplies of seeds were available in the Canje, Berbice, Demerara, Pomeroon and Aruka river districts. The Department imported 190,240 Pará rubber seeds from Ceylon and the Straits Settlements, from which 119,240 plants were raised. Several firms imported stumps from Ceylon and from Surinam. These stumps were inspected at the Port of Entry, and all of them (114,200) were found to be free from disease. Some further experiments were carried out with *Sapium* rubber, but it is evident that there is no outlook for this kind of rubber. Young trees give very low yields, while the rubber has to be collected largely, if not entirely, as scrap. This cannot be commercially remunerative and no further extension of planting of *Sapium* will take place. The greater part, if not the whole, of that planted will have to be abandoned as a total loss."

SOME TAPPING RESULTS.

Dealing with the work at Issororo Experiment Station, Professor Harrison says that the cultivation has made satisfactory progress, as the average girth at three feet from the ground of the five-year-old Pará rubber trees was 19 inches in February, 1913, their average girth in February, 1912, being 15 inches. In accordance with directions issued by the Board of Agriculture tapping experiments were commenced with Pará and *Sapium* rubbers in June, 1912. The yields from the *Sapium* trees were most unsatisfactory, the young trees yielding rubber only in scrap form. Those with Pará rubber were most satisfactory, but owing to the inexperience of the tappers, the rubber obtained per tree was low, averaging only one-fifth of a pound of dry rubber per tree during the period over which the tapping extended (seven months). The results for 1913-14 are far more satisfactory, a return of 2½ lbs. of dry rubber per tree per annum being obtained.

REPORTS ON SAMPLES SENT TO LONDON.

Samples from Issororo were sent to the Imperial Institute, which reported as follows: *Para Rubber Biscuits*.—From 4½ to 5-year-

old trees at Issororo. Weight, 1 lb. 3 ozs. Small thin biscuits, light brown to a reddish brown in color, clean and in good condition. The rubber was slightly weak, but, considering the age of the trees from which it was obtained, its physical properties must be regarded as quite satisfactory. *Results of Examination*.—Loss on washing (moisture and impurities) 1.0 per cent.

Composition of Dry Washed Rubber.

Caoutchouc	95.3 per cent.
Resin	2.0
Proteid	2.5
Ash	0.2

This rubber is very satisfactory in chemical composition, containing over 95 per cent. of caoutchouc in the dry material, and in this respect it is quite equal to plantation Pará rubber from the East. The strength of the rubber will no doubt improve as the trees become older and the product will then be of excellent quality.

NO DEMAND FOR *MANIHOT GLAZIOUII*, *CASTILLOA* OR *FUNTUMIA*.

The report upon the "Economic Work" at the Botanic Gardens states that during the year 151,927 seeds were imported from Singapore, of which 96,059 germinated, a percentage of 63.22 per cent., and that 40,000 seeds were imported from Ceylon, of which 23,184 germinated, a percentage of 56.82 per cent.; a total of 192,927 seeds, of which 119,243 germinated. During the year of a total of 68,992 economic plants sold from the Botanic Gardens, 51,058 were *Hevea* rubber plants. *Manihot Glaziovii* continued to produce seed, but there was no demand for it or for plants, nor for *Castilloa*, *Sapium* or *Funtumia*.

INSECT PESTS.

The Government Economic Biologist, G. E. Bodkin, issues a separate report upon insect pests attacking cultivation. He states: "Heavy infestation of the larvae of the well-known Cassava hawk moth (*Dilophonotus ello*) occurred early in the year and the Pará and other rubber trees in most districts received a serious setback through continuous defoliation by these caterpillars." He adds: "This moth will attack nearly every species of plant belonging to the family *Euphorbiaceae* and is thus well able to complete its life history on the plants growing in the native forest and on waste or uncultivated lands. A very thorough investigation was conducted into methods of elimination of this pest. Spraying with a mixture of lead arsenate and water at the rate of 4 lbs. of lead arsenate to 50 gallons of water was found to be the most effective method where large areas were concerned. Hand-picking the larvae in small areas was also found effective. This pest increased in numbers in a most alarming way and most serious results were anticipated. Fortunately, however, the appearance of a small egg parasite gradually reduced the pest to normal numbers. Up to the present time *Hevea Brasiliensis*, as grown in British Guiana, has shown itself to be a plant peculiarly free from the attack of insects. This immunity from insect attack may safely be taken as a sure index that the trees are making vigorous and healthy growth, for in plant life insect attack is often associated with weak and unhealthy growth."

TAPPING EXPERIMENTS IN BRITISH GUIANA.

The experimental work of tapping indigenous *Hevea* trees is being carried out at the Hills estate, British Guiana, by C. K. Bancroft, assistant director of Science and Agriculture. That variety of rubber tree grows in some abundance at the location indicated.

An organization has been formed among the manufacturers of Sonneberg and Saxe-Meiningen for the purpose of making an exhibit of their products at the Panama-Pacific International Exposition, and government aid has been asked to make this display as elaborate as possible. Representation is also expected from toy manufacturers in other parts of the world.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED APRIL 7, 1914.

- N** 1,092,353. Rubber tire with leather lining. M. Hallanan, New York.
- 1,092,368. Fountain pen. H. E. Knies, White Haven, Pa.
- 1,092,375. Tire valve. W. A. Goetz and W. A. Day, Weaverville, Cal.
- 1,092,397. Resilient wheel. A. T. Gookin, Cambridge, Mass.
- 1,092,413. Automobile wheel. H. Hill, Phoenix, Ariz.
- 1,092,417. Swimming apparatus. M. Hlinka, Cleveland, Ohio.
- 1,092,448. Resilient wheel. P. F. Marcante, Allentown, Pa.
- 1,092,455. Tire protector. D. G. Mitchell, Oberon, N. D.
- 1,092,464. Attachment for pneumatic tire valves. T. J. O'Leary, St. Paul, Minn.
- 1,092,485. Hand stamp. L. K. Scotford, Chicago, Ill., and Max C. Price, assignors to Hill-Independent Manufacturing Co.—both of Muskegon, Mich.

Design.

- 45,595. Protective shield. V. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York.

Trade Marks.

- 60,265. Parker, Stearns & Co., New York. The words *Surf Queen*. For rubber bathing caps.
- 60,788. Elchemco Manufacturing Co., Jersey City, N. J. The word *Elchemco*. For rubber tires.
- 64,404. Mulconroy Co., Philadelphia, Pa. The word *Mulconroy*. For metallic hose coverings, hose couplings, hose clamps, hose pipe nozzles, hose nipples, etc.
- 75,512. Helmuth Voss, Hamburg, Germany. The word *Novapercha*. For a gutta percha substitute.
- 75,988. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Cougar*. For belting.
- 75,991. The Goodyear Tire & Rubber Co., Akron, Ohio. The word and number *Hytex 200*. For belting.
- 75,992. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Jove*. For belting.
- 75,993. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Thor*. For belting.
- 75,994. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Wyoga*. For belting.
- 60,890. Peckham & Mather, New York. The words *the Luy Ann*. For dress shields.
- 66,381. American Asbestos Co., Norristown, Pa. The word *Ambesco*. For packings and gaskets formed of cloth woven from asbestos yarn and belting formed of woven asbestos yarn.
- 74,824. T. W. Meredith, New York. The word *Myrod*. For leather and other boots, shoes and slippers, including those combining the use of rubber.
- 75,284. Eberhard Faber, New York. The word *Tinta*. For lead pencils and rubber erasers.
- 75,377. The Worthington Ball Co., Elyria, Ohio. Illustration of arrow in heavy black effect. For golf balls.
- 75,709. The McGowan Co., Homestead, Pa. The word *Lightning* in electrical effect. Puncture cure for pneumatic tires.

ISSUED APRIL 14, 1914.

- 1,092,836. Protective rubber cap, with stopple, for milk bottles. S. Schulhoff, Philadelphia, Pa.
- 1,092,834. Felly band and rim for wheels. C. H. Albert, Indianapolis, Ind.
- 1,092,251. Apparatus for effecting subaqueous irrigation of the bowels. A. Brosch and O. Von Aufschnaiter, Vienna, Austria.
- 1,092,310. Vehicle tire. S. G. Carkhuff, Akron, Ohio.
- 1,092,353. Fountain syringe. L. E. Pease, West Somerville, Mass.
- 1,092,375. Demountable rim. A. R. Behnke, St. Paul, Minn.
- 1,092,397. Tire valve. W. A. Goetz and W. A. Day, Weaverville, Cal.
- 1,092,399. Resilient wheel. A. T. Gookin, Cambridge, Mass.
- 1,092,413. Automobile wheel. H. Hill, Phoenix, Ariz.
- 1,092,417. Swimming apparatus. M. Hlinka, Cleveland, Ohio.
- 1,092,448. Resilient wheel. P. F. Marcante, Allentown, Pa.
- 1,092,455. Tire protector. D. G. Mitchell, Oberon, N. D.
- 1,092,464. Attachment for pneumatic tire valves. T. J. O'Leary, St. Paul, Minn.
- 1,092,485. Hand stamp. L. K. Scotford, Chicago, Ill., and Max C. Price, assignors to Hill-Independent Manufacturing Co.—both of Muskegon, Mich.
- 45,595. Protective shield. V. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York.
- 60,265. Parker, Stearns & Co., New York. The words *Surf Queen*. For rubber bathing caps.
- 60,788. Elchemco Manufacturing Co., Jersey City, N. J. The word *Elchemco*. For rubber tires.
- 64,404. Mulconroy Co., Philadelphia, Pa. The word *Mulconroy*. For metallic hose coverings, hose couplings, hose clamps, hose pipe nozzles, hose nipples, etc.
- 75,512. Helmuth Voss, Hamburg, Germany. The word *Novapercha*. For a gutta percha substitute.
- 75,988. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Cougar*. For belting.
- 75,991. The Goodyear Tire & Rubber Co., Akron, Ohio. The word and number *Hytex 200*. For belting.
- 75,992. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Jove*. For belting.
- 75,993. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Thor*. For belting.
- 75,994. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Wyoga*. For belting.
- 1,093,616. Sanitary garment protector. V. Guinzburg, assignor to I. B. Kleinert Rubber Co.—both of New York.
- 1,093,672. Sectional pneumatic tire. J. C. Wilson, Belchertown, Mass.
- 1,093,712. Fountain pen. E. G. McLeod, Brockton, Mass.
- 1,093,736. Wheel tire. M. Silva, Provincetown, Mass.
- 1,093,739. Alarm mechanism for pneumatic-tired wheels. M. F. Stadtmuller, Fort Dodge, Iowa.
- 1,093,825. Tire tool. G. W. Bryant, New York.
- 1,093,845. Milking device. M. Goehler, Vancouver, B. C., Canada.
- 1,093,849. Wheel comprising a plurality of independent rubber annuli. W. T. Harris, Louisville, Ky.
- 1,093,865. Sanitary shield for dental instruments. C. F. Lauderdale, Portland, Ore.
- 1,093,902. Resilient wheel tire. T. B. Yeaman, Nashville, Tenn.
- 1,093,907. Nozzle. H. Birnbaum, Rapid City, S. D.
- 1,093,923. Process of preparing rubber from hydrocarbons. R. B. Earle, assignor to Hood Rubber Co.—both of Boston, Mass.
- 1,093,075. Anesthetizer. G. Clark, assignor to The Ohio Chemical & Mfg. Co.—both of Cleveland, Ohio.
- 1,093,987. Life saving apparatus. T. F. Gleason, Muscatine, Iowa.
- 1,094,034. A resilient tire. R. E. Sturman, Franklin township, Wright county, Minn.
- 1,094,052. Demountable rim for vehicle tires. P. B. Bosworth, assignor to Firestone Tire & Rubber Co.—both of Akron, Ohio.
- 1,094,062. Hand stamp. H. S. Folger, Chicago, Ill., and A. M. Comstock, M. M. Corey and W. Boulthouse, Muskegon, Mich., assignors to The Advance Mfg. & Supply Co., Chicago, Ill.
- 1,094,084. Rim and tire holder for automobiles. F. C. Miller, Easton, Pa.
- 1,094,085. Tire holder for automobiles, etc. F. C. Miller, Easton, Pa.
- 1,094,159. Process of producing keto compounds from ketones and alkylaminomethanes. G. Merling and O. Chrzescinski, Elberfeld, and H. Kohler, Leverkusen, near Cologne, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, Germany.
- 1,094,160. Process of producing keto compounds from ketones and tetraalkyldiaminomethanes. G. Merling and O. Chrzescinski, Elberfeld, and H. Kohler, Leverkusen, near Cologne, assignors to Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, Germany.
- 1,094,164. Combined spreader and clamp for tires. S. E. Nold, assignor to The Aluminum Foundry Co.—both of Alliance, Ohio.
- 1,094,223. Process for producing isoprene. L. P. Kyriakides, assignor to Hood Rubber Co.—both of Boston, Mass.

- 1,094,224. Process for producing 1,3-diols. L. P. Kyriakides and R. B. Earle, Cambridge, assignors to Hood Rubber Co., Boston, Mass.
- 1,094,226. Implement for topping pneumatic tires. C. Le Duc, Chatsworth, N. J.
- 1,094,233. Fountain how pen. C. F. Roth, Quincy, Mass.
- 1,094,307. Armored resilient tire. A. Crowe and R. W. Kellner, Youngstown, Ohio.
- 1,094,335. Process for producing 1,3-Glycols (B-Glycols). R. B. Earle and L. P. Kyriakides, Cambridge, assignors to Hood Rubber Co., Boston, Mass.
- 1,094,336. Process for producing 1,3-Glycols. R. B. Earle and L. P. Kyriakides, Cambridge, assignors to Hood Rubber Co., Boston, Mass.
- 1,094,337. Process of preparing latic substances. R. B. Earle, Cambridge, assignor to Hood Rubber Co., Boston, Mass.
- 1,094,325. Manufacture of reinforced inner tubes of pneumatic tires. F. H. Hall, Norton Lindsey, England.

Devices

- 4,118. Rubber path. M. J. Steiner, New York, assignor to Patent Stearns & Co., Brooklyn, N. Y.

Trade Marks

- 6,111. The United Rubber Co., Inc., Albany, N. Y. The word *Model* printed over faint outline of bridge. For vehicle tires composed wholly or in part of rubber.
- 71,233. C. De Hibbs, Fort Worth, Tex. Illustration of mounted cowboys. For rubber tires.
- 73,411. E. Krieger, New York. The word *Model* for rain coats and rubber coats.
- 73,069. A. Gumbinner, New York. The word *Model*. For fountain pens.
- 74,734. National Chicle Company, New Orleans, La. The words *chicle Mint*. For chewing gum.
- 76,029. F. H. Fleer Corporation, Philadelphia, Pa. The word *Bobs*. For chewing gum and chewing gum products.
- 76,578. The Beacon Falls Rubber Shoe Co., Beacon Falls, Conn. The letter *B* with *uddy* written through center. For boots and shoes made partly or wholly of rubber.
- 76,594. A. J. Tower Co., Boston, Mass. The word *Handicoat*. For waterproof coats.
- 77,006. I. B. Klempert Rubber Co., New York. The word *Sand*. For dress shields.

ISSUED APRIL 28, 1914.

- 1,094,467. Method of preparing asbestos fibre for insulating purposes. H. L. Owen, York, Pa., assignor to General Electric Co., New York.
- 1,094,505. Purification of asbestos. W. R. Whitney, Schenectady, N. Y., assignor to General Electric Co., New York.
- 1,094,509. Separable rim for automobile wheels. W. M. Wirth, St. Louis, Mo.
- 1,094,538. Swimming device. J. Davis, Bloomington, Ill.
- 1,094,539. Process of producing 1,3-Butyleneglycol. K. Delbruck and K. Meisenburg, assignors to Farbenfabriken vorm. Friedr. Bayer & Co.—all of Elberfeld, Germany.
- 1,094,580. Rubber substitute. H. Mayer, New York.
- 1,094,616. Resilient vehicle wheel. C. H. Weber, Hilliard, Ohio.
- 1,094,685. Syringe. A. Spangler, Moline, Ill.
- 1,094,706. Wheel rim and tire. F. A. DeBert, Brooklyn, N. Y.
- 1,094,720. Milking machine. H. C. Judson, New York.
- 1,094,746. Artificial denture. A. Pochwadt, Berlin-Schöneberg, Germany.
- 1,094,752. Wheel. H. Schlicht, Walnut, Iowa.
- 1,094,827. Tire protector. F. Wylls, Atlanta, Mich.
- 1,094,830. Non-inflammable varnish composition. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.
- 1,094,853. Method of treating rawhide and the product resulting therefrom. A. H. Henderson, assignor to The Henderson Rubber Co.—both of Baltimore, Md.
- 1,094,879. Manufacture of rubber hose. H. Z. Cobb, Winchester, Mass.
- 1,094,956. Vehicle wheel. A. E. Wickman, Willmar, Minn.
- 1,095,051. Life saving suit. C. G. Walle, New York.
- 1,095,064. Umbrella protector with a soft rubber cushioning tip. H. C. Anderson and A. P. Kenner, New York.
- 1,095,134. Spray nozzle. N. A. Wright, Pontiac, Mich.

Trade Marks

- 73,130. The B. F. Goodrich Co., New York. Outline drawing of rubber boot. For rubber boots.
- 73,958. Scout Gum Co., Inc., Rochester, N. Y. Illustration of black-filled oblong with outline of Indian's head in circle in one corner, outside of which is printed *Ju-Ju*. For chewing gum.
- 75,061. Paramount Rubber Co., Trenton, N. J. Triangle outline, on right side of which is printed *Paramount* with initials *P.R.* in center. For rubber boots.
- 76,070. Continental Rubber Works, Erie, Pa. The word *Vitalic* written above word *Tires*, the one letter *T* serving for both words. For pneumatic tires.
- 76,072. Continental Rubber Works, Erie, Pa. The word *Vitalic* written above word *Tubes*, the one letter *T* serving for both words. For rubber tubes for pneumatic tires.
- 77,122. A. W. Faber, Stein, near Nuremberg, Germany. The word *Sophomore*. For lead pencils, rubber erasers, etc.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912 and 1913.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 1, 1914.]

- 28,123 (1912). Tools for removing and replacing elastic tires. A. Pass, 26 Leys avenue, Letchworth, Hertfordshire.
- 28,126 (1912). Repair patches composed of soft unvulcanized rubber. F. Woodgates, Mount View, and T. W. Jourdan, Alsia, France.
- 28,134 (1912). Duplex air tubes for wheel tires. A. Green, 15 Windsor Terrace Crescent, and J. H. Green, Cooke Street Iron Works, Chapel street—both in Salford.
- 28,220 (1912). Tires with rims enclosing air tubes or chambers. J. Donkin, 32 Christchurch Road, Bournemouth.
- 28,392 (1912). Leather manufacture. W. Spalteholz, 21 Mozartstrasse, Leipzig, and K. Haug, 4 Doppelstrasse, Hersted, Hessen-Nassau—both in Germany.
- 28,408 (1912). Puncture-closing composition. Lootens & Co., and G. Schinckus, 54 Rue Pletinckx, Brussels.
- 28,453 (1912). Jackets and covers for wheel tires. M. Moses, Caerbont, Llangadock, Carmarthenshire.
- 28,584 (1912). A machine for removing or loosening the bark from or pieces of the *Latex* vine. J. I. Palmer, 18 Ropes maker street, London.
- 28,589 (1912). Wheel tires with rubber faced wooden blocks. A. R. Hubbard, R. Flay and H. Grossheim, 158a, Norwood Road, West Norwood, London.
- 28,646 (1912). Watertight electric insulating plugs. Siemens Bros. & Co., Caxton House, Westminster, and W. D. Le Corney, 43 Mount street, Charlton, London.
- 28,697 (1912). Molding india rubber. E. Smith, Corbar Road, Buxton, Derbyshire.
- 28,701 (1912). Coating fabrics with adhesive. F. Hansing, 26 Romford Road, Stratford, London, and Fiddes, Todd & Corry, 33 Adelaide street, Belfast.
- 28,746 (1912). Dress shields. J. H. P. Hurst, 478 High Road, Leyton, London.
- 28,759 (1912). Elastic cords in exercising apparatus. H. J. Wareham, 28 Gateley Road, Brixton, London.
- 28,760 (1912). Elastic cord in exercising apparatus. H. J. Wareham, 28 Gateley Road, Brixton, London.
- 28,769 (1912). Air tube for wheel tires. J. T. Brierley, W. Timperley, and Leyland & Birmingham Rubber Co., Golden Hill Works, Leyland, Lancashire.
- 28,812 (1912). Substances sulphur. P. A. Newton, 6 Brems Buildings, Chancery Lane, London.
- 28,821 (1912). Synthetic caoutchouc substances. P. A. Newton, 6 Brems Buildings, Chancery Lane, London.
- 28,863 (1912). Spring wheels with continuous outer rigid ring and metal springs, other than helical and volute springs. B. Buscaglia, Avenue Verdelil, Lausanne, Switzerland.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 8, 1914.]

- *28,968 (1912). Tires with rims enclosing air tubes or chambers. W. H. Crawford, 3301 Grove avenue, Richmond, Va., U. S. A.
- 29,027 (1912). Tread bands, projections, and surfaces for wheel tires. J. J. Ward, Rocklands, and W. H. Monck, 61 Elm Park Road—both in Finchley, London.
- 29,030 (1912). Reducing sulphur dioxide. M. Ruthenburg, Electrical Federation Offices, Kingsway, London.
- 29,040 (1912). Discharge cocks for barrels, etc., fitted with an india rubber washer. B. Jackle, Lichtenfeld, Post Dammann, Wurtemberg, Germany.
- 29,098 (1912). A boot wiping mat for motor cars, etc., comprising a block of rubber. T. Huet, 112 Boulevard Exelmans, Paris.
- 29,117 (1912). Lubricators, etc., for calendars and like machines. H. Dootson, 11 Shrewsbury Road, Bolton, Lancashire.
- 29,173 (1912). Spring wheels with continuous outer rigid ring and metal springs. G. Cauvry and L. Salel, 11 Boulevard Longchamp, Marseilles, France.
- 29,189 (1912). Tires with rims enclosing air tubes or chambers. E. M. Dubus, 7 Rue Dorée, Melun, France.
- 29,203 (1912). Tread bands; tyre attachments to rims. A. E. Harvey, 3 Kingsley Road, Cotham, Bristol.
- 29,215 (1912). Cleaner for driving belts consisting of thin rubber strips. W. O. Lamont, 41 Newbold way, Southport, and Harrogate Patent Tyre & Rubber Co., 20 Dickenson street, Manchester.
- 29,216 (1912). Vehicle springs of the *Latex* vine. J. I. Palmer, 18 Ropes maker street, London.
- 29,217 (1912). Process for producing *Latex*. W. A. Hall, 30 E. 41st street, New York.
- 29,218 (1912). Compound and process for india rubber. J. Norzagaray, 18 Hagenstrasse, Munich, and J. C. Lippert, Holloway, London.
- 29,405 (1912). A hollow metal heel fitted with a detachable tread of india rubber. A. Rokkel, Katharinenstrasse, Jekaterinodar, Kubansches Gebiet, Russia.
- 29,406 (1912). A puncture proof band for use inside a tire cover or as a tread band. C. P. Theron, Heilbron, Orange Free State, South Africa.
- 29,471 (1912). A spring coil for wheel tires consisting of two or more wire coils coated with rubber. H. L. A. Cognet, 7 Rue du Commandant Lamy, Paris.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 16, 1914.]
- 29,521 (1912). Rubber mounted on a cover of leather. E. J. Griffiths, 10 Station Road, Walsall, Staffordshire.
- 29,532 (1912). Rubber mounted on a cover of leather. E. J. Griffiths, 10 Station Road, Walsall, Staffordshire.
- 29,662 (1912). Wheel tires; coupling ropes. T. Slack, Wellington Works, Stockport, Cheshire.
- Spring wheels with sectional outer guided members. L. Anderson, R. F. D. 1, Lake Creek, Texas, U. S. A.
- 29,731 (1912). Speaking tubes. A. Mirams, 157 North street, Brighton.
- 29,749 (1912). Vulcanizing presses. P. Beer, 7 Gustav-Mullerstrasse, Schonberg, Berlin.
- 29,756 (1912). Detachable rim attachments to wheels. L. E. Barbedienne, 12 Mansell Road, Acton, London.
- 29,768 (1912). Disc wheel adapted to receive a tire carrying rim. C. S. Challiner, 18 Park Range, and J. A. Challiner, "The Glen," Anson Road—both in Victoria Park, Manchester.
- 29,770 (1912). Cask closure comprising rubber ring. W. Brown, 23 Victoria Park, Saltaire, Shipley; A. Beckett, Whitaker's Buildings, and H. W. Robinson, 134 Harrogate street—both in Bradford, and A. Brindley, New Cottage Farm, Stanningley, Pudsey—all in Yorkshire.
- 29,777 (1912). Tube joints formed with rubber ferrule. W. S. Tyler, Rhosesmor, Stoke Park, Coventry.
- 29,783 (1912). Electric junction boxes. British Insulated & Helsby Cables, Ltd., and R. W. Blades, Prescott, Lancashire.
- 29,794 (1912). Suspensory bandages. C. Balsegur, Belleville-sur-Saone, France.
- 29,850 (1912). Car wheel tires. F. J. Don, 51 South John street, Liverpool.
- 29,871 (1912). Inhalers. T. Hughes, 25 Dale street, Stockport, Cheshire.
- 29,944 (1912). Tire attachments to rims. F. J. Hadfield, Manor House, Ringsfield, Beccles, Suffolk.
- 29,950 (1912). Hand stamps. J. A. McClure, 516 Exchange, Empire Kaus, Kansas, U. S. A.
- 29,954 (1912). A. Tomlins, 21 Churton street, Pimlico, and H. N. Gray, 34 Commercial Road, Deptford, London.
- 29,958 (1912). Buoyant mattresses. W. W. Caverley, 3328 Quebec street, Vancouver, Canada.
- 29,982 (1912). Artificial teeth. H. Warnecke, 11 Meter Strasse, Bremen, Germany.
- 29,997 (1912). Leather manufacture; impregnating with rubber. K. Hartmann, 111 Lindenstrasse, Berlin.
- 30,056 (1912). Molding rubber articles. W. Eggers, 294 Taaffe Place, Brooklyn, N. Y., U. S. A.
- 30,062 (1912). Neckties having elastic collar bands. J. H. Stevenson, 67 The Crescent, Ascot Vale, Victoria, Australia.
- 30,069 (1912). Tire, comprising an outer cover and a tubular core. W. J. Woodcock, 102 Gates avenue, Brooklyn, N. Y., U. S. A.
- 30,102 (1912). Life belts, etc. W. G. Richardson, 627 Massachusetts avenue, Cambridge, Mass., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 22, 1914.]

- 37 (1913). Sheeting india rubber. J. Donnelly, 21 Mincing Lane, London.
- 86 (1913). Waterproofing fishing nets. A. I. Van Vriesland, 22 Kurbrunnenstrasse, Aachen, Germany.
- 92 (1913). Wearing apparel with elastic supporting band. O. E. Buley, 7 Burbage Road, Herne Hill, London.
- 164 (1913). A machine for printing on tape and the like and comprising rubber covered printing and impression rollers. O. J. Raush, 3 Denman street, Piccadilly Circus, London.
- 182 (1913). Siphon bottle with leak preventive washer of rubber. J. R. Trigwell, Rayleigh, Bishop's Park Road, Norbury, London.
- 223 (1913). Cells for accumulators of galvanic batteries made of compositions containing waste or reformed rubber. W. E. E. Richards, 50 Great Tower street, London.
- 305 (1913). Dyeing and impregnating textiles, etc. W. R. Von Freiherr, 15 Muenchnerstrasse, Dresden, Saxony.
- 311 (1913). Films, threads, etc., from viscose solutions. W. P. Thompson, 6 Lord street, Liverpool.
- 352 (1913). Forming dental plates by means of pressure by india rubber against a die. C. Rauhe, 8 Konigsallee, Dusseldorf, Germany.
- 377 (1913). Solid rubber tread band and rim attachment. A. Haller, Sioux City, Iowa, U. S. A.
- 381 (1913). Solid rubber tire. F. N. Carhart, Sea Cliff, and A. Van de Water, Glen Cove—both in New York, U. S. A.
- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 29, 1914.]
- 391 (1913). Wheel tires. J. P. Tye, 176 East India Dock Road, and C. Hanks, 88 Canton street—both in Poplar, London.
- 398 (1913). Spring wheel with rim designed to secure a rubber tire. M. D. Price, Miami, Fla., U. S. A.
- 457 (1913). Jackets and covers for tires, air tubes and chambers. M. P. Prince, 458 Beacon street, Boston, and C. M. Bernheimer, 63 High street, Newburyport, both in Massachusetts, U. S. A.
- 461 (1913). Pneumatic cushions for use in conjunction with the usual laminated springs for vehicles. C. J. Stovel, Stovel Building, San Francisco, Cal., U. S. A.
- 467 (1913). Jackets and covers for wheel tires. C. H. Gray, India Rubber, etc., Works Co., Silvertown, Essex, and T. Sloper, Southgate Villas, Devizes, Wiltshire.
- 471 (1913). Metallic spring bodies so constructed as to support the interior surface of a pneumatic tire outer cover. E. A. Muskett, Warwick Cottage, River View, Chase Side, Enfield, and R. J. Wickham, 74 Southview Road, Hornsey, London.

- 574 (1913). Blocking rats. E. J. Diaz, Tabanera de las Descalzas to Puente de la izquierda, Madrid.
- 592 (1913). Lubricating can comprising ball of rubber. G. W. Cole, Fenally, N. J., U. S. A.
- 613 (1913). Rubber substitutes. O. Rohm, 4 Weiterstadterstrasse, Darmstadt, Germany.
- 623 (1913). Detachable rim attachments to wheels. L. Forse, Grove avenue, Yeovil, Somerset.
- 652 (1913). Heating apparatus for rubber vulcanizing press. T. Gare, Cumberland House, Park Lane, Wembley, London.
- 680 (1913). Playing ball. F. Khittl, 20 Mauerkirchenstrasse, Munich, Germany.
- 765 (1913). A cloak with a detachable waterproof lining. P. J. Hime, 27 Buckland Crescent, Hampstead; B. H. Bayliss, Victoria Lodge, Blenheim Road, Raynes Park, and C. and L. Spiro, 51 High street, Whitechapel—all in London.
- 794 (1913). Squeezes comprising rubber strips. W. Taylor, 7 Derby street, Kings Cross, London.
- 808 (1913). Process for forming pneumatic tires, balls, dolls, etc. H. Zeumer, 125 Kaiserstrasse, Karlsruhe, Baden, Germany.
- 827 (1913). Tire attachments to rims. T. Sloper, Southgate Villas, Devizes, Wiltshire.
- 849 (1913). Coagulating rubber latex. E. J. Byrne, Norwich Union Buildings, St. James street, Piccadilly, London.
- 884 (1913). Breathing apparatus. J. G. Huskisson, Mansfield Rescue Station, Mansfield, Nottingham, and H. C. Jenkins, Meco Works, Moorfields, Sheffield.
- 905 (1913). An inextensible air tube fitted with an extensible cover. M. D. Rucker, Heimath, Foxley Lane, Purley, Surrey.
- 929 (1913). Spring wheel with continuous outer rigid ring and metal springs other than helical and volute springs. Blakoe, 62a Queens Road, Bayswater, London.

NEW ZEALAND.

ISSUED MARCH 26, 1914.

- 32,685. Spare wheel attachment. F. R. Dennison, Oamaru, N. Z.
- 34,221. Pneumatic wheel. G. R. Taylor, 373 Bath street, Glasgow, Scotland, and R. Whyte, 151 Reid street, Bridgetown, Glasgow.
- 34,224. Automatic pressure alarm for pneumatic tires. D. Brodie, Clifton, Church street, Croydon, N. S. W., and W. A. Thomas, Talofa, Burwood Road, Burwood, N. S. W.

THE GERMAN EMPIRE.

PATENTS ISSUED With Dates of Validity.

- 272,995, Class 39b (November 9, 1912). Process for extracting rubber from latices. S. C. Davidson, Belfast, Ireland.
- 273,027, Class 86c (February 8, 1913). Asbestos woven fabric. Bruno Henschke, Forst i., Lausitz.
- 273,159, Class 63c (June 22, 1912). Manufacture of a rubber mass for the treads of pneumatic tire covers. Raubgummi-Verwertungsgesellschaft, Hamburg.
- 273,193, Class 39b (May 29, 1913). Process for manufacture of an elastic mass for the preservation of footwear. Franz Goertz, Schuhwarenhaus, M. Gladbach.
- 273,362, Class 39b (March 23, 1913). Process for manufacture of homogeneous masses from colloids, glycerine and mineral oils. Gummi (Foreign) Limited, Westminster, England.
- 273,482, Class 39b (November 22, 1912). Process for introduction of albumen into rubber. Dr. Werner Esch, Hamburg.
- 273,708, Class 39b (May 16, 1913). Process for manufacture of a substitute for rubber. Farbenfabriken, vorm. Friedr. Bayer & Co., Leverkusen.
- 273,774, Class 39b (April 1, 1913). Process for improving properties of synthetic rubber. Dr. Julius Ephraim, Königgratzerstrasse 68, Berlin.
- 273,882, Class 30c (December 8, 1913). Manufacture of gloves for surgical operations. Zieger & Wiegand, Leipzig.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 463,470 (August 13, 1913). A caducet. Tubes in sized fabric of imitation rubber, and their process of manufacture.
- 463,479 (September 23). L. L. Petit-Barat. Pneumatic mouthpiece in soft rubber.
- 463,731 (June 26). E. Tortorolo. Elastic hoop for vehicle wheels.
- 463,766 (September 23). W. Bednar. Elastic tire.
- 463,774 (October 11). J. Schönnig. Press to shape and vulcanize automobile and bicycle tires.
- 463,776 (October 13). Société Jean Laval & Co. Row of elastic balls, replacing air chambers in all kinds of vehicles.
- 463,801 (December 26, 1912). O. Röhm. Process of making an artificial rubber of practical utility.
- 463,827 (October 20, 1913). C. W. Strohbeck. Improvements in rubber heels.
- 463,923 (October 22). The B. F. Goodrich Co. Anti-skid device for wheels with rubber tires.
- 463,927 (October 23). W. Dunbar. Pneumatic tire cover.
- 463,937 (October 23). Berquerand & Co. Improvements in rubber gloves and other protective appliances.
- 463,945 (December 30, 1912). L. Cornet & Cuenat. Method of making rubber heels.
- 164,060 (September 29, 1913). C. Weidmann. Automobile tires.
- 464,079 (October 9). G. Macchiavello and A. Barbacini. Improved system of re-soling footwear with movable soles and heels.
- 464,158 (October 27). Olier & Cie. Automatic mixer for rubber and analogous substances.

- 464,600 (October 28). P. Deneer. Vehicle wheel tires.
 464,136 (October 28). C. H. Bachmann. Process of vulcanizing rubber latex.
 464,077 (October 29). A. Gaudais. Movable rubber belt.
 464,474 (November 26). J. Mohr. New process for the vulcanization of rubber.
 464,323 (October 31). N. Rousselle. Multiple pneumatic tire with annular solid cover.
 464,386 (October 29). H. F. Howell. Improvement in pneumatic tires.
 464,425 (November 4). Olier & Cie. Improvements in the fastening of pneumatic tires.
 464,427 (November 5). H. Reed, M. Lander and C. Lander. Improvement in pneumatic tires.
 464,370 (November 11). J. H. Kozak. Improved pneumatic tires.
 464,557 (September 19). J. Bader. Pneumatic vehicle tires.
 464,580 (October 10). J. J. J. Dupont. Non-slipting pneumatic tires.
 464,614 (October 16). J. J. J. Dupont. Non-slipting pneumatic tires.

[NOTE: Patentees' names and addresses of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 10 cent. cost per sheet.]

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 464,600 (March 26, 1914). Process of vulcanizing rubber sheets. J. Lapiere, rue Monthazon, 19, Tours, France.
 464,608 (March 26, 1914). Process and device for the manufacture of syringes on a hard core in one piece with the neck. Montsouris, South-Francoise de Gaudeloupe, Paris.
 264,292 (April 18, 1914). Improvements in methods of fixing asbestos and other slabs. South-Antoine, Liège, Nederland-Holland.

RUBBER COATS AT NIAGARA AND IN LABRADOR.

By Felix J. Koch.

NEXT time you are in search of some pattern in rubber coats make a little journey to the Labrador coast. You will get more contrasts there than perhaps anywhere else on earth.

Not, of course, that Americans are not addicted to them



FISHERMEN OF LABRADOR.

Get aboard any great tourist steamer in the summer, let the weather be a bit wet, and from steamer trunks and bags there appears a variety of rubber coats and rubber caps that would do a rubber dealer's heart good to see. Pretty tourist girls, especially, affect these styles, and with seamen's black rubber hats all but enframing their faces, and the latest cut in the rubber coat about their forms, they are most attractive. Fond admirers will lead them to the bridge over the compass for a snapshot.

At Niagara Falls, too, the American and the Canadian take

to a different kind. Those who make the trip on the "Maid of the Mist" down almost under the falls, holding and to sing with the current, are advised to rent rubber suits, and these of the style shown in the picture. What a sight they are, too, as they



AT NIAGARA FALLS.

arrayed, they venture on deck, to let the spray trickle in rivulets down their faces.

But it is up in Newfoundland and Labrador that one meets most with the rain coat. Thirty thousand odd fishermen come to this Northland as soon as the ice melts in the spring-time, to take the cod. They live in miserable "telts" or "stages" on the rocks, and it is much preferable to be on the sea to housing up in these fish barns. So, safe in their rubber slickers, these men go out daily after the prolific cod.

Most of them are sold by dealers in St. John's, but here



OFF THE COAST OF LABRADOR.

and there a trader is found going up the coast with a supply of slickers. He sells for cash and his prices are high for the quality he gives. But if one man buys, all buy.

The photographs show a few of the more characteristic specimens in use.

It is estimated that 1,250,000 tires will be required to equip this year's output of Ford automobiles. These tires are supplied by four of the leading American tire manufacturing companies and are received in quantities to keep pace with the production of automobiles. About 400 sets of tires comprise a car load, so that 781 freight cars will be called into service in transporting these tires to the factory, where they are placed on wheels, inflated, the fittings attached and then sent to the car assembling department, emerging as parts of completed cars.

Review of the Crude Rubber Market.

AS it will be recalled, fine Pará and plantation rubbers after a long severance, both stood on April 17 in London at 3s. ½d. (73.99 cents). They almost immediately again parted company, standing on April 30, respectively, at 2s. 11¼d. (71.46 cents) and 2s. 7¼d. (63.35 cents). During the month of May the tendency has continued downward in both cases, the figures on May 25 (at the time of writing) being 2s. 9¾d. (68.41 cents) and 2s. 4d. (56.76 cents). A conservative policy has continued to mark the operations of buyers, no disposition being manifested to anticipate future requirements.

The reports of plantation companies coming to hand indicate a material diminution of costs under the influence of last year's fall in price. These conditions have in various cases led to the reinvestment of the amounts lately distributed in dividends. It is considered in London that the statistical position of rubber is encouraging, it being estimated that the world's present production is fully covered by consumption.

That plantation rubber is coming forward in larger quantity than last year is shown by the fact that the London auction of April 21 included 1,386 tons, as compared with 871 tons offered at the sale of April 29, 1913. The auction of May 5, 1914, comprised 1,190 tons, the prices realized being 2d. to 3d. (4 to 6 cents) lower than those of the previous sale. Out of the total offered some 400 tons consisted of first latex pale crepe and smoked sheet.

At the auction of May 19 1,500 tons were put up for sale, with the result of a further decline on last sale prices of about 2d. (4 cents).

The statistical position of plantation rubber was reported as follows:

	1913,	1914,
Stocks March 31.....tons	2,793	3,710
Arrivals in April.....	2,744	3,360
	5,537	7,070
Deliveries in April.....	2,368	3,500
	3,169	3,570
Stock April 30.....	3,169	3,570
Arrivals January 1 to April 30.....	10,503	14,340
Deliveries January 1 to April 30.....	9,350	13,980

Total shipments from Brazil for the rubber year to the end of June 30, 1914, are estimated as representing a shortage of 4,000 tons, as compared with the previous year.

Returns from Amsterdam show stocks April 1, 152 tons; stocks April 30, 98 tons. Deliveries in April had exceeded arrivals by about 50 tons.

At the sale of April 30 practically the whole quantity, about 66 tons (mostly *Hevea*), was sold on the average at full prices, a reduction of 3 per cent. being in some cases recorded on valuations. The next inscription sale was to be held on May 27, and was to include about 135 tons, principally *Hevea*.

The Rotterdam sale of May 8 comprised about 53 tons, of which 35 were Congo, etc., and about 18 *Hevea*. Owing to the keen competition the whole quantity was sold, but on the basis of 2d. (4 cents) below valuations.

At the Antwerp sale of April 28, 343 tons Congos were offered, of which 234 were sold slightly below valuations. Of the plantations the whole 274 tons was practically sold at an advance representing 1d. (2 cents) per pound on valuations.

Antwerp stock at end of April was 210 tons against 945 tons at same period last year.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and May 29, the current date:

PARA.	June 1 '13.	May 1, '14.	May 29, '14.
Islands, fine, new.....	84@85	72@	61@63
Islands, fine, old.....	.....	.....	63@64
Upriver, fine, new.....	89@92	74@75	70@71
Upriver, fine, old.....	.....	.....	71@73
Islands, coarse, new.....	40@41	31@	29@30
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	58@59	45@46	42@43
Upriver, coarse, old.....	.....	.....	.....
Cameta	42@43	35@36	32@33
Caucho (Peruvian) ball.....	58@59	45@46	42@43
Caucho (Peruvian) .....	.....	.....	.....

PLANTATION CEYLON.

Fine smoked sheet.....	83@	68@69	57@59
Fine pale crepe.....	80@	67@69	57@59
Fine sheets and biscuits.....	79@80	62@67	55@57

CENTRALS.

Esmeralda, sausage	58@59	45@46	43@44
Guayaquil, strip .....	.....	.....	.....
Nicaragua, scrap	55@56	40@41	42@43
Panama .....	.....	.....	.....
Mexican plantation, sheet.....	.....	.....	43@46
Mexican, scrap	56@57	43@44	40@42
Mexican, slab .....	.....	.....	.....
Mangabeira, sheet .....	.....	.....	40@42
Guayule .....	.....	.....	.....
Balata, sheet .....	.....	.....	64@65
Balata, block .....	.....	.....	46@49

AFRICAN.

Lopori, ball, prime.....	.....	53@54	49@53
Lopori, strip, prime.....	.....	.....	.....
Aruwimi .....	.....	.....	35@47
Upper Congo, ball red.....	.....	.....	40@
Ikelemba .....	.....	.....	35@45
Sierra Leone, 1st quality.....	.....	.....	37@40
Massai, red.....	49@52	48@50	48@50
Soudan Niggers .....	.....	40@42	40@42
Cameroon, ball	35@36	25@33	25@33
Benguela .....	.....	31@32	31@32
Madagascar, pinky .....	.....	.....	.....
Accra, flake	22@23	22@23	22@23

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: Conditions as regards commercial paper in the rubber line have ruled about the same for May as in April, there being a good demand for the best names at 4@4½ per cent., and those not so well known 5@5½ per cent., with some of the latter going as high as 6 per cent.

NEW YORK PRICES FOR APRIL (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine	\$0.74 @ 0.76	\$0.78 @ 0.80	\$1.12 @ 1.18
Upriver, coarse .....	.44 @ .47	.54 @ .66	.92 @ .96
Islands, fine .....	.66 @ .73	.76 @ .85	1.10 @ 1.14
Islands, coarse .....	.34 @ .34	.37 @ .41	.63 @ .66
Cameta .....	.35 @ .37	.36 @ .45	.66 @ .70

STATISTICS PARA INDIA RUBBER (IN TONS)
(INCLUDING CAUCHO).

STATISTICS FOR THE MONTH OF APRIL.

	Para.	Cauch.	1914. Tons.	1913. Tons.	1912. Tons.	1911. Tons.
Receipts at Para.....	2,470	1,360	= 3,830	against 3,540	3,270	3,490
Shipments to Liverpool..	720	370	= 1,090	1,980	1,290	1,450
Shipments to Continental Ports	200	120	= 320	" 410	440	270
Shipments to America....	1,400	1,060	= 2,460	" 1,120	1,350	1,110
American Imports	1,150	880	= 2,030	" 1,410	1,300	1,320
American Deliveries	1,230	970	= 2,200	" 1,670	1,910	1,130
Liverpool Imports	980	400	= 1,380	" 2,100	1,466	1,681
Liverpool Deliveries	1,115	370	= 1,485	" 1,770	1,426	1,128
Continental Imports	280	30	= 310	" 680	230	170
Continental Deliveries....	270	30	= 300	" 380	260	230

VISIBLE SUPPLY—1ST MAY, 1914.

	1914. Para.	1913. Cauch.	1912.	1911.
Stock in England, Para, 1st hands.....	660	1,046	1,530	3,369
Para, 2nd hands.....	65	127	812	
Cauch.....	310	710	190	808
Stock in Para, 1st hands.....	410	160	750	1,650
2nd hands.....	390	150	340	250
Syndicate	810	810	2,240	2,810
Stock in America.....	230	110	230	640
Stock on Continent.....	40	10	350	40
Afloat—Europe	910	490	1,530	1,250
Afloat—America	850	540	620	440
	4,365	1,770		

Total Visible Supply, including Cauch. 6,513 6,503 6,770 12,089

CROP STATISTICS—30TH JUNE, 1913, 30TH APRIL, 1914.

	Para.	Cauch.	1913/14.	1912/13.	1911/12.	1910/11.
Para receipts.. { 1913/14 26,500 7,690 }	34,190	36,970	33,380	32,720		
Para Shipments to Europe 13,690 4,140	17,830	21,130	17,260	16,880		
Para Shipments to America 12,610 3,530	16,140	17,100	17,500	11,640		
England Landings, net.....	12,265	14,962	12,523	12,833		
England Deliveries, net.....	13,080	14,449	15,873	10,613		
America Landings, net.....	15,190	16,720	19,745	12,090		
America Deliveries, net.....	15,030	16,660	19,465	11,590		
Continental Imports, net.....	3,300	4,360	2,870	2,670		
Continental Deliveries, net.....	3,500	4,105	2,940	2,650		

POSITION—1ST MAY, 1914.

Increase in Receipts during April, 1914, against April, 1913.....	290
Decrease in Receipts—Crop, July/April, 1913/14, against 1912/13....	*2,780
Decrease in Deliveries—Crop, July/April, 1913/14, England and Continent, against 1912/13.....	1,974
Decrease in Deliveries—Crop, July/April, 1913/14, America, against 1912/13.....	1,630
Decrease in Visible Supply Para Grades, against 1st May last year....	368
Decrease in Stock, England, April 30th, 1914, against April 30th, 1913	848

WM. WRIGHT & CO., Brokers,
21, Mincing Lane, London, E.C.

London, 1st May, 1914.

During the month 35 tons Para have been shipped from Europe to America.

*A decrease of 2,710 tons Rubber and 70 tons Cauch.

Rotterdam.

HAVELAAR & DE VRIES report [May 14]:

The sale of May 8 included 30 tons Congo, 5½ tons Conaguy and 16 tons Hevea. Congos brought irregular prices, but were all sold. Plantations were sold below valuations, in harmony with the movement of the London market. Next sale is fixed for June 5.

Amsterdam.

JOOSTEN & JANSSEN report [May 15]:

At the sales of April 30, Heveas realized from par to 3 per cent. below valuations. Next sale was announced for May 27.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound:

	May 29, '14.
Old rubber boots and shoes—domestic.....	7½@ 7½
Old rubber boots and shoes—foreign.....	7¼@ 7½
Pneumatic bicycle tires.....	4½@ 4¾
Automobile tires	5½@
Solid rubber wagon and carriage tires.....	5½@
White trimmed rubber	10 @10¼
Heavy black rubber	3¾@ 4
Air brake hose	3½@
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2½
Matting	5½@ ¾
No. 1 white auto tires.....	5½@
Foreign auto tires	5¼@

Antwerp.

RUBBER STATISTICS FOR APRIL.

DETAILS.	1914.	1913.	1912.	1911.	1910.
Stocks, March 1...kilos	342,330	651,505	359,016	645,614	499,102
Arrivals in April—					
Congo sorts	151,863	385,070	360,605	131,553	340,456
Other sorts	6,123	8,138	15,117	44,791	40,014
Plantation sorts	302,724	246,814	129,715	90,033	49,400
Aggregating	803,040	1,291,527	864,453	911,991	928,972
Sales in April.....	552,851	301,257	426,940	312,877	458,504
Stocks, April 30.....	250,189	990,270	437,513	599,114	470,468
Arrivals since January					
Congo sorts	843,496	1,076,786	1,091,077	1,072,515	1,171,286
Other sorts	52,818	43,316	45,735	205,968	120,169
Plantation sorts	944,890	683,711	407,325	257,562	178,094
Aggregating	1,841,204	1,803,813	1,544,137	1,536,045	1,469,549
Sales since January 1..	2,150,296	1,324,603	1,781,162	1,525,143	1,540,593

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

MAY 1.—By the steamer Denis from Pará and Manaos:

	Fine.	Medium.	Coarse.	Cauch.	Total.
Arnold & Zeiss.....	158,900	52,800	170,500	253,900=	636,100
General Rubber Co.....	133,200	24,100	35,700	32,000=	225,000
Meyer & Brown.....	69,200	13,400	103,700	105,400=	291,700
Henderson & Korn.....	53,100	7,100	38,400	38,500=	137,100
H. A. Astlett & Co.....	.....	22,700	88,900	51,900=	163,500
Robinson & Co.....	153,900	37,400	66,700	85,200=	343,200
G. Amsinck & Co.....	12,700	1,400	900	.....	15,000
Hagemeyer & Brunn.....	.....	.....	.....	60,600=	60,600
Johnstone, Whitworth & Co.	26,300	.....	8,500	.....	34,800
W. R. Grace & Co.....	9,300	.....	.....	32,600=	41,900
Total	616,600	158,900	513,300	660,100=	1,948,900

MAY 8.—By the steamer Gregory from Pará and Manaos:

	Fine.	Medium.	Coarse.	Cauch.	Total.
Arnold & Zeiss.....	57,100	11,400	63,100	71,500=	203,100
Meyer & Brown.....	21,400	3,300	51,700	139,300=	215,700
H. A. Astlett & Co.....	.....	2,100	10,600	21,300=	34,000
Henderson & Korn.....	17,800	2,000	15,400	28,000=	63,200
W. R. Grace & Co.....	.....	.....	3,600	22,800=	26,400
General Rubber Co.....	23,600	200	.....	200=	24,000
Robinson & Co.....	106,600	18,500	17,000	61,100=	203,200
Total	226,500	37,500	161,400	344,200=	769,600

MAY 8.—By the steamer Gregory from Iquitos:

	Fine.	Medium.	Coarse.	Cauch.	Total.
Meyer & Brown.....	7,600	.....	3,100	60,200=	70,300
H. A. Astlett & Co.....	4,300	.....	800	10,500=	15,600
W. R. Grace & Co.....	.....	.....	.....	15,900=	15,900
G. Amsinck & Co.....	.....	.....	.....	2,000=	2,000
Total	11,300	.....	3,900	88,600=	103,800

MAY 19.—By the steamer Dunstan from Pará and Manaos:

	Fine.	Medium.	Coarse.	Cauch.	Total.
General Rubber Co.....	202,200	28,200	39,100	100=	269,600
Meyer & Brown.....	30,500	4,900	68,200	46,700=	150,300
Henderson & Korn.....	18,400	.....	54,000	52,000=	124,400
L. Hageners & Co.....	6,400	1,700	.....	19,100=	27,200
H. A. Astlett & Co.....	21,100	16,300	34,600	86,400=	157,800
W. R. Grace & Co.....	.....	.....	60,100	68,000=	128,100
Hagemeyer & Brunn.....	15,100	3,200	4,700	18,100=	41,100
Robinson & Co.....	131,700	9,800	75,700	10,700=	227,900
American Express Co.....	11,100	.....	.....	.....	11,100
Johnstone, Whitworth & Co.	.....	.....	14,100	.....	14,100
Arnold & Zeiss.....	14,600	700	16,800	68,600=	100,700
Total	451,100	64,800	366,700	369,700=	1,252,300

MAY 20.—By the steamer Aidan from Pará:

	Fine.	Medium.	Coarse.	Cauch.	Total.
Arnold & Zeiss.....	75,100	3,200	93,100	43,600=	215,000
General Rubber Co.....	11,900	1,600	2,800	.....	16,300
Meyer & Brown.....	.....	.....	.....	63,000=	63,000
Hagemeyer & Brunn.....	16,500	1,100	3,800	600=	54,000
G. Amsinck & Co.....	12,200	1,300	3,600	4,900=	22,000
Henderson & Korn.....	5,400	700	7,900	28,800=	42,800
H. A. Astlett & Co.....	20,200	15,800	15,400	40,000=	91,400
American Express Co.....	10,900	.....	.....	.....	10,900
Total	152,200	23,700	158,600	180,900=	515,400

PARA RUBBER VIA EUROPE.

[illegible]

OTHER NEW YORK ARRIVALS.

CENTRALS.

			POUNDS
April 27.	By the <i>Colon</i>		
G. Auguste & Co.		1,600	
M. A. De Los Angeles		400	2,000
April 28.	By the <i>Santa</i>	Bolivia	
Eggers & Heinlein			800
April 29.	By the <i>Colon</i>	Bolivia	
I. H. Rossbach Bros. & Co.		30,000	
Adolph Hirsch & Co.		3,500	33,500
April 30.	By the <i>Prinz Joachim</i>	Colon	
Andean Trading Co.			2,500
May 1.—By the <i>Philadelphia</i> —Laguayra:			
Scholtz & Marturet.		4,000	
American Trading Co.		1,000	5,000
May 2.	By the <i>Colon</i>	Colon	
R. Del Castillo & Co.			1,500
May 4.—By the <i>Colon</i> =Colon:			
Piza, Nephews & Co.			3,500
May 4.—By the <i>Allemania</i> =Cartagena:			
Caballero & Blanco		1,000	
Pablo Calvet & Co.		100	4,600
May 4. By the <i>Guantanamo</i> =Mexico:			
J. Menendez & Co.		1,500	
General Export & Commission Co.		500	27,600
May 6.—By the <i>Prinz Joachim</i> =Colon:			
H. W. Peabody & Co.			1,500
May 6.—By the <i>Trent</i> =Colon:			
H. Wolff & Co.		1,500	
C. E. Griffin & Co.		1,200	
Camacho, Roldau & Van Sickel.		1,000	
J. Amson & Co.		1,000	

May 10.—By the <i>Leopold</i> —Bahia		
Adolph Hirsch & Co.	19,000	
May 11.—By the <i>Graccia</i> —Colombia:		
A. Held	1,200	
Various	2,000	3,200
May 13.—By the <i>Leopold</i> —Bahia		
Andean Trading Co.	1,600	
A. Held	1,000	2,600
May 14.—By the <i>Advance</i> —Colon:		
C. M. Smith & Co.	11,000	
J. S. Sembrada & Co.	4,000	
Various	800	15,800
Wessels, Kulenkampff & Co.	600	
Public Cable & Co.	1,800	
May 14.—By the <i>Proctor</i> —New Orleans	600	8,900
May 14.—By the <i>Proctor</i> —New Orleans		
Various		14,500
May 15.—By the <i>Columbo</i> —Mexico:		
E. Steiger & Co.	12,500	
German-American Coffee Co.	2,500	
Harburger & Stack	200	
Willard Hawes & Co.	2,000	
F. Probst & Co.	200	
I. Kubie & Co.	2,000	
American Trading Co.	300	
J. A. Medina & Co.	600	
J. Menendez & Co.	1,500	
General Export & Commission Co.	200	22,000
May 18.—By the <i>Columbo</i> —New Orleans		
Various		10,000
May 18.—By the <i>Calamares</i> —Port Limon:		
Wessels, Kulenkampff & Co.	1,000	
May 19.—By the <i>Proctor</i> —Bahia		
Roszbach Bros. & Co.	43,000	
Adolph Hirsch & Co.	2,800	71,000

AFRICAN

		PAGES
APRIL 27	By the <i>Prussia</i> =Hamburg	
Rubber & Guayule Agency, Inc.	10,500	
Various	7,000	17,500
APRIL 27	By the <i>Mariners</i> =London	
Mayer & Brown	6,500	
Arnold & Zeiss.....	1,000	
Charles T. Wilson.....	3,000	
Various	5,000	15,500
APRIL 28	By the <i>Falkland</i> =Antwerp	
Various		22,000
APRIL 28.—By the <i>Georgic</i> =Liverpool:		
Various		5,000
APRIL 30.—By the <i>Oceanic</i> =Southampton:		
Arnold & Zeiss.....	56,500	
Various	55,000	111,500
APRIL 30	By the <i>Prussia</i> =Hamburg	
Ed. Maurer	9,000	
Rubber & Guayule Agency, Inc.	1,000	
Various	2,500	12,500
APRIL 30.—By the <i>Santa Anna</i> =Marseilles:		
Various		25,000
MAY 2.—By the <i>Baltic</i> =Liverpool:		
Earle Bros.	4,500	
W. R. Grace & Co.....	4,500	
Various	23,000	32,000

MAY 2 By the <i>Kassapa</i> —London 1 1 1 1			
Hamburg:			
Meyer & Brown.....	0,000		
Ed. Maurer	10,000		
W. R. Grace & Co.....	6,000		
Heldberg & Kopp.....	0,000		
Arnold & Zeiss.....	37,000		
Various.....	5,000		80,000
MAY 4.—By the <i>Florida</i> —Havre:			
Johnstone, Whitworth & Co.....	11,200		
MAY 4.—By the <i>St. Louis</i> —Southampton:			
Arnold & Zeiss.....			22,500
MAY 5.—By the <i>Kroonland</i> —Antwerp:			
Meyer & Brown.....			7,000
MAY 6.—By the <i>Venezia</i> —Lisbon:			
Hagemeyer Trading Co.....	14,000		
Rubber & Guayule Agency, Inc.,	70,000		
Various.....	50,000		134,000
MAY 7 By the <i>Florida</i> —Hamburg:			
Ed. Maurer.....	1,500		
Rubber & Guayule Agency, Inc.,	11,000		
Various.....	1,500		14,000
MAY 9.—By the <i>Chicago</i> —Havre:			
Meyer & Brown.....			60,000
MAY 9 By the <i>Florida</i> —Liverpool:			
Johnstone, Whitworth & Co.....	4,500		
Earle Bros.....	2,000		6,500

MAY 11.—By the <i>Caronia</i> =Liverpool:		
Arnold & Zeiss.....		45,000
MAY 11.—By the <i>St. Paul</i> =Southampton:		
Meyer & Brown.....	2,500	
Various.....	17,000	19,500
MAY 12.—By the <i>President Lincoln</i> =Hamburg:		
Rubber & Guayule Agency, Inc.,.....	5,200	
Ed. Maurer.....	11,200	
Various.....	7,000	23,400
MAY 12.—By the <i>Frankdale</i> =Lisbon:		
Various.....		63,500
MAY 13.—By the <i>Elberta</i> =Antwerp:		
Arnold & Zeiss.....	40,000	
Various.....	20,000	60,000
MAY 14.—By the <i>New York</i> =Southampton:		
Arnold & Zeiss.....		65,000
MAY 15.—By the <i>Insurgente</i> =Liverpool:		
Arnold & Zeiss.....		25,000
MAY 16.—By the <i>Cedric</i> =Liverpool:		
General Rubber Co.....		11,200
MAY 18.—By the <i>Lapland</i> =Antwerp:		
Arnold & Zeiss.....	7,500	
Various.....	32,500	40,000
MAY 18.—By the <i>R. Hambour</i> =Havre:		
Various.....		6,000
MAY 18.—By the <i>Minnesota</i> =London:		
Arnold & Zeiss.....	11,200	
Various.....	7,500	18,700
MAY 18.—By the <i>Imperial</i> =Hamburg:		
Ed. Maurer.....	4,000	
W. Stiles.....	4,500	
Various.....	11,200	19,700
MAY 19.—By the <i>Germania</i> =Lisbon:		
Various.....		60,000

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

APRIL 25.—By the <i>Stolzenfels</i> =Colombo:	
Meyer & Brown.....	*16,000
Rubber & Guayule Agency, Inc.....	*20,000
Henderson & Korn.....	*13,500
W. Stiles.....	*3,500
Robinson & Co.....	*11,200
Various.....	*82,800 *147,000
APRIL 27.—By the <i>Pretoria</i> =Hamburg:	
Rubber & Guayule Agency, Inc.....	*20,000
W. Stiles.....	*11,200
Various.....	*20,000 *51,200
APRIL 7.—By the <i>Mercur</i> =London:	
Meyer & Brown.....	*112,000
Adolph Hirsch & Co.....	*11,200
W. R. Grace & Co.....	*9,500
Johnstone, Whitworth & Co.....	*75,000
Henderson & Korn.....	*50,000
General Rubber Co.....	*345,000
Robert Barclay & Co.....	*11,000
Rubber Trading Co.....	*30,000
Arnold & Zeiss.....	*86,000
Earle Bros.....	*3,500
Robinson & Co.....	*18,500
Rubber & Guayule Agency, Inc.....	*5,600
Charles T. Wilson.....	*140,000
Raw Products Co.....	*2,000
L. Littlejohn & Co.....	*4,500
Goodyear Tire & Rubber Co.....	*300,000
Various.....	*12,000 *1,246,000
APRIL 7.—By the <i>Nea Amsterdam</i> =Amsterdam:	
Meyer & Brown.....	*69,500
Arnold & Zeiss.....	*4,500
W. Stiles.....	*5,600
Robinson & Co.....	*13,500
Rubber Trading Co.....	*12,000
Various.....	*12,000 *117,100
APRIL 25.—By the <i>Fabian</i> =Antwerp:	
Meyer & Brown.....	*88,000
Arnold & Zeiss.....	*35,000
Various.....	*35,000 *158,000
APRIL 30.—By the <i>Oceanic</i> =Southampton:	
Henderson & Korn.....	*37,000
Robinson & Co.....	*4,500
Earle Bros.....	*3,500
W. R. Grace & Co.....	*6,700
Johnstone, Whitworth & Co.....	*22,500
Goodyear Tire & Rubber Co.....	*50,000
Arnold & Zeiss.....	*155,000
Various.....	*45,000 *324,200
APRIL 30.—By the <i>President Grant</i> =Hamburg:	
Meyer & Brown.....	*17,000
W. R. Grace & Co.....	*11,200
Henderson & Korn.....	*5,600
W. Stiles.....	*13,500
Rubber & Guayule Agency, Inc.....	*10,000
Various.....	*25,000 *82,300

MAY 2.—By the <i>Baltic</i> =Liverpool:	
Arnold & Zeiss.....	*2,000
Johnstone, Whitworth & Co.....	*4,500 *6,700
MAY 3.—By the <i>Kaiserin Augusta Victoria</i> =Hamburg:	
Meyer & Brown.....	*33,500
Henderson & Korn.....	*35,000
Various.....	*35,000 *103,500
MAY 4.—By the <i>St. Paul</i> =Southampton:	
Johnstone, Whitworth & Co.....	*90,000
Various.....	*11,200 *101,200
MAY 4.—By the <i>St. Paul</i> =Southampton:	
Meyer & Brown.....	*14,000
Arnold & Zeiss.....	*30,000
Henderson & Korn.....	*40,000
W. R. Grace & Co.....	*1,500
Ed. Maurer.....	*11,200
Robert Badenhop.....	*11,200
Various.....	*2,000 *109,500
MAY 4.—By the <i>St. Paul</i> =Southampton:	
Meyer & Brown.....	*9,000
Rubber & Guayule Agency, Inc.....	*45,000
Arnold & Zeiss.....	*35,000
W. Stiles.....	*1,500
W. R. Grace & Co.....	*40,000
Ed. Maurer.....	*12,500
Various.....	*169,500 *380,500
MAY 4.—By the <i>Yasama</i> =Singapore:	
The B. F. Goodrich Co.....	*30,000
Arnold & Zeiss.....	*85,000
Henderson & Korn.....	*40,500
W. R. Grace & Co.....	*11,200
Ed. Maurer.....	*10,000
L. Littlejohn & Co.....	*30,000
Various.....	*43,000 *149,700
MAY 4.—By the <i>Yasama</i> =Singapore:	
Meyer & Brown.....	*38,000
General Rubber Co.....	*15,000
W. R. Grace & Co.....	*1,500
Johnstone, Whitworth & Co.....	*30,500
Charles T. Wilson.....	*80,000
Adolph Hirsch & Co.....	*33,500
Henderson & Korn.....	*210,000
Various.....	*75,000 *494,500
MAY 5.—By the <i>Noordam</i> =Amsterdam:	
Meyer & Brown.....	*60,500
Manhattan Rubber Mfg. Co.....	*7,000
Various.....	*13,500 *111,000
MAY 5.—By the <i>Noordam</i> =Amsterdam:	
Meyer & Brown.....	*170,000
Various.....	*37,000 *207,000
MAY 6.—By the <i>St. Paul</i> =Southampton:	
Meyer & Brown.....	*101,000
W. Stiles.....	*5,000
Ed. Maurer.....	*5,000
Earle Bros.....	*2,000
Arnold & Zeiss.....	*365,000
Rubber Trading Co.....	*50,000
Johnstone, Whitworth & Co.....	*22,500
L. Blitz.....	*4,500
Henderson & Korn.....	*6,000
Goodyear Tire & Rubber Co.....	*140,000
Various.....	*48,000 *749,000
MAY 7.—By the <i>Pennsylvania</i> =Hamburg:	
Meyer & Brown.....	*16,000

W. R. Grace & Co.....	*13,500
Ed. Maurer.....	*5,000
Henderson & Korn.....	*4,500
Rubber & Guayule Agency, Inc.....	*19,000 *58,600
MAY 9.—By the <i>Chicago</i> =Havre:	
Michelin Tire Co.....	*35,000
MAY 11.—By the <i>St. Paul</i> =Southampton:	
Meyer & Brown.....	*5,500
Ed. Maurer.....	*11,200
Rubber & Guayule Agency, Inc.....	*2,200
Henderson & Korn.....	*22,500
Arnold & Zeiss.....	*90,000
A. W. Brunn.....	*22,500
Various.....	*45,000 *198,900
MAY 12.—By the <i>President Lincoln</i> =Hamburg:	
Meyer & Brown.....	*21,000
Rubber & Guayule Agency, Inc.....	*15,000
Arnold & Zeiss.....	*7,000
Henderson & Korn.....	*33,500
W. Stiles.....	*9,000
Ed. Maurer.....	*10,000
Various.....	*17,500 *113,000
MAY 13.—By the <i>Yasama</i> =Singapore:	
Meyer & Brown.....	*40,500
W. R. Grace & Co.....	*53,500
Charles T. Wilson.....	*65,000
General Rubber Co.....	*450,000
Western Electric Co.....	*17,000
Earle Bros.....	*3,000
Robinson & Co.....	*16,000
Henderson & Korn.....	*157,000
Johnstone, Whitworth & Co.....	*65,000
Various.....	*113,700 *980,700
MAY 13.—By the <i>Yasama</i> =Singapore:	
Meyer & Brown.....	*3,500
Robinson & Co.....	*7,000
Manhattan Rubber Mfg. Co.....	*6,000 *16,500
MAY 13.—By the <i>Yasama</i> =Singapore:	
Meyer & Brown.....	*160,000
Arnold & Zeiss.....	*52,500
General Rubber Co.....	*25,000
Various.....	*18,000 *255,500
MAY 14.—By the <i>New York</i> =Southampton:	
Arnold & Zeiss.....	*33,500
Robinson & Co.....	*22,500 *56,000
MAY 15.—By the <i>Kentucky</i> =Singapore:	
Meyer & Brown.....	*30,000
Arnold & Zeiss.....	*175,000
Ed. Maurer.....	*25,000
Henderson & Korn.....	*45,000
The B. F. Goodrich Co.....	*200,000
Ed. Boustead & Co.....	*10,000
Various.....	*215,000 *700,000
MAY 16.—By the <i>Indra</i> =Singapore:	
Meyer & Brown.....	*40,000
Gravenhorst & Co.....	*1,000
Ed. Boustead & Co.....	*22,500
The B. F. Goodrich Co.....	*7,000
Robinson & Co.....	*12,000
Henderson & Korn.....	*30,000
Ed. Maurer.....	*1,500
Johnstone, Whitworth & Co.....	*11,000
Goodyear Tire & Rubber Co.....	*9,000
Various.....	*70,000 *311,000

MAY 18.—By the <i>Kubinga</i> =Colon:	
Meyer & Brown.....	*5,000
Arnold & Zeiss.....	*1,500
Rubber & Guayule Agency, Inc.....	*8,500
H. W. Peabody & Co.....	*7,000
Various.....	*40,000 *193,500
MAY 18.—By the <i>Kubinga</i> =Colon:	
Meyer & Brown.....	*11,200
Rubber & Guayule Agency, Inc.....	*4,500
Henderson & Korn.....	*2,500
Various.....	*13,000 *31,200
MAY 18.—By the <i>Kubinga</i> =Colon:	
Meyer & Brown.....	*13,500
Ed. Maurer.....	*22,500
W. R. Grace & Co.....	*25,000
General Rubber Co.....	*85,000
Charles T. Wilson.....	*65,000
Henderson & Korn.....	*205,000
Various.....	*11,200
Rubber Trading Co.....	*11,200
Robert Badenhop.....	*7,000
W. Stiles.....	*3,000
Robinson & Co.....	*10,000
Rubber & Guayule Agency, Inc.....	*22,500
Goodyear Tire & Rubber Co.....	*90,000
A. W. Brunn.....	*23,500
Various.....	*55,000 *763,200
MAY 18.—By the <i>Lapland</i> =Antwerp:	
Meyer & Brown.....	*100,000
Arnold & Zeiss.....	*122,500
Various.....	*12,500 *235,000
MAY 18.—By the <i>Lapland</i> =Antwerp:	
Arnold & Zeiss.....	*18,000
General Rubber Co.....	*2,200
Robinson & Co.....	*13,500
Rubber Trading Co.....	*7,000
Various.....	*25,000 *65,700

CUSTOM HOUSE STATISTICS.

Imports:	Pounds.	Value.
India rubber.....	16,296,509	\$8,453,519
Balata.....	97,220	51,336
Gutta percha.....	108,466	19,488
Gutta jelutong (Pontianak).....	1,751,999	70,440
Total.....	18,254,194	\$8,594,783
Exports:	Pounds.	Value.
Balata.....	4,000	1,640
Gutta percha.....	330	195
Reclaimed rubber.....	147,914	23,910
Rubber scrap, imported.....	1,132,605	77,296
Rubber scrap, exported.....	277,733	29,413

BOSTON ARRIVALS.

Imports in April, 1914.	Pounds.	Value.
Gutta jelutong.....	629,080	\$30,424
Gutta percha.....	2,232	451
India rubber.....	314,599	143,928

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS FOR APRIL, 1914 (IN KILOGRAMS).

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTAL.
	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	
Zarges, Berringer & Co.....	103,577	37,065	154,190	186,297	481,129	155,538	36,070	39,012	73,673	304,293	785,422
General Rubber Co. of Brazil.....	79,450	17,383	56,198	145,206	298,237	37,409	4,113	1,320	31,210	74,052	372,289
J. Marques.....	88,771	13,393	113,807	190,145	406,116	71,803	6,145	1,520	5,320	84,788	490,904
Seligmann & Co.....	7,678	.....	1,680	.....	9,358	28,984	.....	1,092	6,050	36,126	45,484
Suarez Hermanos & Co., Ltd.....	6,032	679	430	30,288	37,429	99,391	.....	16,867	73,376	189,634	227,063
Pires Teixeira & Co.....	7,650	3,879	70,835	36,400	118,764	40,431	.....	.....	40,431	159,195	159,195
Sundry exporters.....	1,530	170	990	1,680	4,370	.....	.....	.....	.....	4,370	4,370
Itacoatiara, direct.....	1,920	320	520	600	3,360	465	.....	400	1,235	1,100	5,460
Manaos, direct.....	296,608	72,889	398,650	590,616	1,358,763	434,021	46,328	60,211	190,864	731,424	2,090,187
Iquitos, direct.....	388,367	88,104	140,586	431,336	1,048,393	169,755	32,715	68,798	152,956	424,224	1,472,617
Total.....	16,390	.....	1,980	33,257	51,627	82,414	5,301	19,073	148,898	255,686	307,313
Total.....	701,365	160,993	541,216	1,055,209	2,458,783	686,190	84,344	148,082	492,718	1,411,334	3,870,117

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING MARCH, 1914 (IN KILOGRAMS).

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTAL.
	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	
Zarges, Berringer & Co.....	151,322	16,206	110,090	51,899	329,517	425,128	104,761	74,494	188,597	792,980	1,122,497
General Rubber Co. of Brazil.....	143,317	29,660	117,000	82,803	372,780	103,851	12,386	6,410	74,421	192,668	565,857
J. Marques.....	46,100	15,281	114,179	141,546	317,106	98,970	7,480	.....	30,993	137,443	454,549
Seligmann & Co.....	28,484	.....	4,307	28,595	61,386	81,534	.....	.....	8,104	99,529	160,915
Suarez Hermanos & Co., Ltd.....	17,726	.....	6,292	33,008	57,026	97,273	.....	5,687	68,484	171,444	228,470
Pires Teixeira & Co.....	5,440	2,890	66,000	3,640	77,970	40,120	.....	.....	.....	40,120	118,090
Sundry exporters.....	21,941	3,522	8,908	8,790	43,161	159,095	8,382	.....	24,475	218,263	261,424
Itacoatiara, direct.....	5,600	600	2,600	5,400	14,200	5,243	330	2,430	6,274	14,277	28,477
Manaos, direct.....	419,930	68,159	429,385	355,681	1,273,155	1,011,214	133,339	125,223	401,348	1,671,124	2,944,279
Iquitos, direct.....	277,485	78,132	137,098	208,046	700,761	802,474	127,355	160,710	445,649	1,536,188	2,336,949
Total, March, 1914.....	697,415	146,291	566,483	563,727	1,973,916	1,813,688	260,694	285,933	846,997	3,207,312	5,181,228
Total, February, 1914.....	620,533	188,066	504,522	535,015	1,848,136	1,761,510	153,908	195,389	885,498	2,996,305	4,844,441
Total, January, 1914.....	914,867	202,392	692,568	238,354	2,048,181	1,094,577	146,610	167,156	291,274	1,699,617	3,747,798



Vol. 50.

JUNE 1, 1914.

No. 3.

TABLE OF CONTENTS.

Editorials:

The Rubber Congress in Batavia.....	461
Will the New Banking Act Help Crude Rubber Financing?	461
The New Market Opened by the Panama Canal.....	462
The Tire Brings Back the War Chariot.....	462
How the Rubber Country Served The Colonel.....	462
The Incidental Injustice of Justice.....	463
Retaliating on the Pedestrian.....	463
Boycotting Old John Barleycorn.....	464
Rubber Works for the Human Interior.....	464
Re Rubber Thieving.....	464

Foreign Trade Opportunities—II—Ecuador..... 465

American Exports and Exporting Methods..... 469

Hunting Guayule By Automobile..... 471

Rubber Cement and Some of Its Uses..... 472

What a Trade-Mark Right Is and How to Obtain It..... 475

Fighting Fire on the Great Liners..... 476

The Close Connection Between Cotton and Rubber..... 477

Cultivation of Rubber on the Malayan Peninsular..... 478

Ceylon Chamber of Commerce..... 480

What the Rubber Chemists Are Doing..... 481

The Origin of the Wool Boot..... 482

Rubber Arbitration Extracts..... 483

Testing of Mechanical Rubber Goods..... 484

The Rubber Trade in Akron..... 485

The Rubber Trade in Boston..... 486

The Rubber Trade in Chicago..... 487

The Rubber Trade in Rhode Island..... 487

The Rubber Trade in Trenton..... 488

The Rubber Trade on the Pacific Coast..... 489

A Distinguished Rubber Chemist..... 490

News of the American Rubber Trade..... 491

New Rubber Goods in the Market..... 497

New Machines and Appliances..... 499

India Rubber Goods in Commerce..... 503

Editor's Book Table..... 503

New Trade Publications..... 504

Interesting Letters from Our Readers..... 505

The India Rubber Trade in Great Britain..... 507

The London Rubber Exhibition..... 508

Some Rubber Interests in Europe..... 509

International Rubber Congress and Exhibition at Batavia..... 510

Some Rubber Planting Notes..... 512

Brazil Continues Preference to American Rubber Goods..... 513

Rubber Notes from Dutch Guiana..... 513

Notes from British Guiana..... 515

Recent Patents Relating to Rubber..... 516

RUBBER ARRIVALS FROM THE CONGO.

APRIL 10. By the steamer *Elisabethville*

Bunge & Co.....	(Comfina) kilos	9,000
do.....	(Belgika)	2,100
do.....	(Forminiere)	2,600
do.....	(Grands Lacs)	7,000
do.....	(Intertropicale)	4,200
Société Coloniale Anversoise.....	(Comminiere)	1,600
do.....	(Kasai)	14,800
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde).....	(Crevelde)	19,900
Comptoir Colonial franco-belge (Charles Dethier).....	(American Congo Cy)	6,800
W. Mallinckrodt & Co.....	(Almarchano)	4,500
Willact Freres.....		5,500 84,300

MAY 5. By the steamer *Universale*

Bunge & Co.....	(Belgika) kilos	1,420
Société Coloniale Anversoise.....	(Lomami)	2,240
do.....	(H. C.)	87
do.....	(Comminiere)	4,231
do.....	(Intertropicale)	13,460
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde).....	(Kasai)	61,000
do.....	(Comfina)	19,600
do.....	(Crevelde)	3,200
Comptoir Colonial franco-belge (Charles Dethier).....	(American Congo Cy)	500 105,738

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to April 20, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.]

	1913.	1914.
To Great Britain.....pounds	3,501,382	5,118,201
To United States.....	2,270,021	2,119,774
To Belgium.....	322,696	1,786,930
To Australia.....	176,617	34,041
To Japan.....	75,502	128,899
To Germany.....	64,862	644,102
To Austria.....	25,515	
To Italy.....	22,460	
To Holland.....	992	
To Russia.....		98,482
To France.....		90,483
To Straits Settlements.....		35,852
To India.....		500
Total.....	6,460,047	10,057,264

(Same period, 1912, 3,737,826; same period, 1911, 1,509,408 pounds.)

The export figures of rubber for 1914 given in the above table include the imports re-exported, viz.: 1,221,947 pounds. To arrive at the approximate quantity of Ceylon rubber exported for 1914 to date, deduct the quantity from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, April 14.	Malacca, March 31.	Penang, Feb. 28.	Port Swettenham, March 31.	Total.
Great Britain.....pounds	5,943,529	1,267,175	3,243,867	6,216,643	16,671,214
Continent.....	586,246		116,400	810,350	1,512,996
Japan.....	265,344				265,344
Ceylon.....	96,374		174,000	436,390	706,764
United States.....	2,606,865		182,933	136,590	2,926,388
Australia.....	20,344				20,342
Total, 1914.....	9,518,700	1,267,175	3,717,200	7,599,973	22,103,048
Total, 1913.....	7,062,458		2,110,666	7,604,588	16,777,712
Total, 1912.....	3,727,218		847,722	3,945,893	8,520,833
Total, 1911.....	1,676,849		330,267	8,458,123	10,465,239

FRENCH RUBBER STATISTICS FOR 1913.

Statistics show that the total of French rubber imports for 1913 was 17,440 tons, distributed as follows: Havre, 8,228 tons; Paris, 2,634 tons; Bordeaux, 2,538 tons; Boulogne, 934 tons; Marseilles, 407 tons; Dunkirk, 168 tons; various ports, 2,531 tons. Exports were 10,687 tons.

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JULY 1, 1914.

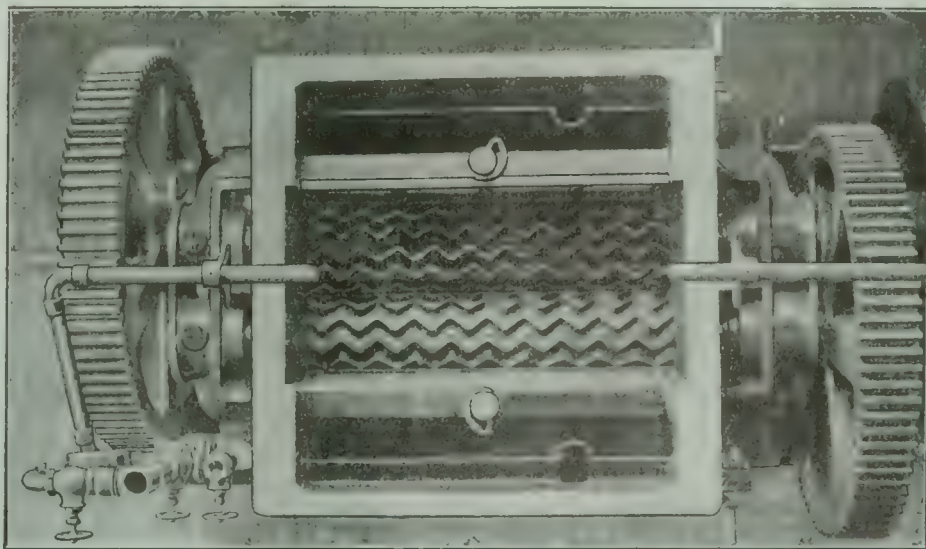
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 The Berlin Rubber Manufacturing Co., Limited, Berlin, Ont.
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TABLE OF CONTENTS ON LAST PAGE OF READING.**HAS SUCCESSFUL SYNTHESIS ARRIVED?**

IF during the last few years the plantation has been a boggy to the dwellers on the Amazon, synthetic rubber has lately played the same interesting role in relation to the Eastern planters.

The new synthetic rubber, styled "Pavea," has already been mentioned several times in these columns. Our English correspondent devotes an interesting paragraph to the subject in the letter which appears in this issue. We learn from him that the manufacturers of Great Britain are so impressed with the possibilities of Pavea that they are hesitating about the usual purchase of their crude supplies, preferring rather to hold off for a season to see how the new rubber materializes.

This new rubber, in some of the details given out regarding it, is certainly rather impressive—not so much perhaps by reason of the million dollar company that is promoting it or the very sizable plant secured for the purpose of its production, but rather because of the positive statements made by its vouchers that it will come on the market before the end of this year to the tune of 1,000 tons per week, that it will be sold at a 10 per cent. discount from the price of first latex, whatever that price may be, and that it can well afford to be

marketed at this reduced figure as its cost is only 8 cents a pound.

If all of this should be true—if our English friends have discovered the way to produce a synthetic rubber at 8 cents a pound in weekly lots of 1,000 tons—the future certainly is dark for all those who derive their rubber from natural sources. In that event the Amazon might as well be dammed up for good and shut off from the world and the carefully cultivated plantations of the East might better revert to jungle land as speedily as possible. But perhaps after all Pará and Singapore would do well to maintain their dock facilities for yet a little while, for this new rubber has been rather more audible than visible, and even if some limited samples have been distributed to the trade, limited samples of other synthetic rubbers have also been produced in the past without any consequent disturbance of the rubber market. The composition of Pavea rubber is kept a profound secret, but it is no secret that the manufacture of any product in thousand-ton lots per week would call for a vast volume of material of some sort, and nothing has yet been discovered which could be converted—even in small quantities—into synthetic rubber at 8 cents per pound or any modest multiple of that figure. And then, as noticed in these columns last month, this new rubber has a very considerable constituent of resin, which gives rise to the conjecture that it is somewhat more akin to natural rubber than it is to the products of synthesis.

It is rather an interesting phenomenon that new synthetic rubbers generally make their appearance on the approach of the summer season. This, however, is fortunate, because at that time the more conservative departments of the industry are likely to be rather quiet, and these hot season oracles from the laboratory help greatly to maintain the mental activity of the trade at its proper level.

THE EXPORT BURDEN RUBBER HAS TO BEAR.

THE table published in the January issue of THE INDIA RUBBER WORLD showing the import duties on manufactured rubber goods, levied in the foreign countries which buy such merchandise from the United States in any considerable volume, attracted a great deal of attention, as it was the first time any attempt had been made to collect and tabulate this valuable information.

This issue contains a table showing the export duties levied on crude rubber by all the countries from which it has yet been shipped in commercial quantities. Some

of these export tariffs are very simple, some quite complex; some very light in their imposition and some extremely onerous. This table shows the great burden borne by the rubber of the Amazon country as compared with the favorable conditions under which plantation rubber is exported from the East. It shows, moreover, the tendency to favor plantation rubber in all the tropical colonies controlled by the different European countries, in which a tax is imposed upon the product of the wild tree while rubber from the planted tree goes out free from tax. This is particularly true of the British, German and Belgian possessions in Africa; while in the Protected Malay States wild rubber pays a duty of fifteen per cent. and plantation rubber of two and a half per cent.

Many interesting features will be found in this tabulation—some interesting because of their importance and some simply because of the inconsistencies they show. For instance, Mexico and British Honduras both place an export tax on chicle but ship rubber free from any impost, while their next door neighbor, Honduras, levies three times as much duty on rubber as on chicle. Then there are the Portuguese African colonies, where the duties at some ports are considerably more burdensome than they are from other ports and where rubber intended for Portugal escapes with a lower tax than rubber intended for any other country. In the Dutch East Indies, too, the export duty from one port is twice that exacted at a neighboring port.

This table is of more than passing interest to the exporters of rubber the world over, for it enables them to compare at a glance their condition with that of other exporters in the various countries where this important industry is carried on.

SHALL LABOR CONSTITUTE A PRIVILEGED CLASS?

NOTWITHSTANDING the sorry charge of conspiracy made by the Administration against those business men who have ventured to express opinions contrary to those entertained in Administration circles, it is to be hoped that our commercial and industrial leaders will still continue to declare their views, and particularly in relation to those anti-trust measures now being considered in Congress which have for their purpose an obvious discrimination in favor of labor. The Clayton Bill, for instance, which passed the House of Representatives on June 5, and is now before the Senate Committee on the Judiciary, in the opinion of leading legal authorities acts as a repeal

of the Sherman law as far as it applies to labor and agricultural organizations; as it would prevent the courts from employing the usual processes of injunction to prevent picketing, boycotting and similar methods in labor strikes. This bill aims to give the members of labor organizations a certain immunity not enjoyed by other citizens. Would this be a wholesome condition? Would it not destroy the basic principle on which the foundation of this Government rests, namely, equal rights to all?

When Mr. Roosevelt was President he was visited by a labor delegation. Being cordially received, one of the delegates remarked, significantly, "We are very glad, Mr. President, to see that the door of the White House is open to the laboring man." To which Mr. Roosevelt instantly responded, "Yes, just as it is to the capitalist." This is the true attitude. Both Labor and Capital, both the man who works with his hands and the man who works with his head, should have precisely the same standing before the law. And it is not only the right but it is the duty of business men to protest against any discrimination in favor of any class of citizens simply because they belong to certain organizations.

RUBBER CONSUMPTION COMPARED WITH POPULATION.

IT is a fair assumption that with the increase in the population of the United States there should be an increase in the consumption of all articles that contribute to the comforts of civilized life; and it may also be reasonably assumed that this consumption will increase more rapidly than the growth of population, for, taking one decade with another, if not one year with another, the purchasing power of the individual is constantly growing.

But in the consumption of rubber goods in this country the increase has so greatly surpassed the growth of population as to be worthy of note. Here is a brief but interesting table that tells the story at a glance:

	1890.	1900.	1910.	1913.
Population of the United States ...	62,947,714	75,994,575	91,972,266	97,028,497
Imports of crude rubber into the United States, in pounds	33,712,089	49,397,138	101,078,825	115,880,641

It will be seen that since 1890 there has been an increase of population of a little over 50 per cent. and an increase in the amount of crude rubber imported of about 250 per cent.; or, to put the matter in another

way, in 1890 the crude rubber brought into this country equaled .54 of a pound per capita, in 1900 .65—in 1910 it had reached 1.10 pound per capita and in 1913 1.19—showing a constantly increasing importation of crude rubber as compared with population. All of this rubber has been manufactured in this country, and by far the greater part of the resulting product consumed here.

The increase in consumption has extended into every department of manufacture. That would naturally be so, as with the growth of manufacture there would be a continually increasing demand for belting, and with increased traffic more and more packing and hose would be needed; while the general tendency to look after physical comfort that comes with enlarging prosperity would mean the consumption of more rubber shoes to protect the feet from wet, and the consumption of more hot water bottles to drive away twinges of rheumatism where the proper protection afforded by rubber shoes had been neglected. But the great increase in consumption of crude rubber in this country is attributable, of course, to the vast proportions assumed by the tire industry. In 1890 there practically was no manufacture of rubber tires in the United States, except for the bicycle; and that industry consumed less than a million pounds per year. In 1900 the making of automobile tires had reached an annual aggregate of only about 60,000, while in 1913 it is safe to say that 7,500,000 casings, and probably an equal number of inner tubes, were made in the United States. This enormous use of crude rubber would account for the consumption, probably, of over 50,000,000 pounds—or more than the entire rubber importation into our ports thirteen years ago.

THE BINDING TIES OF TRADE.

THE thing that *should* put an end to war is an ethical appreciation of its iniquity, but the thing that actually *will* put an end to war, some day—and that day not so very far distant—is the human instinct for swapping, or, if you prefer—trade. Trade is the great destroyer of national barriers, the supreme harmonizer and unifier. What's the use of shooting a man if he's got a good bargain to offer?

All of which is more or less apropos of the sixth annual "International Congress of Chambers of Commerce and Commercial and Industrial Associations," held in Paris early in June, attended by a thousand delegates from thirty-seven different countries—all the civilized countries of the globe,—and some still on their way

towards civilization. This round regiment of men, commercial leaders in their respective communities, represented 369 chambers of commerce and various kindred associations; and they came together with one purpose—to see if they could not increase the trade of the world, and particularly commerce with one another.

All sorts of matters were discussed, from the purification of advertising to the maintenance of an international gold reserve in a number of different countries, to be drawn upon whenever any country seemed to need a little financial ballast. The chairman of the committee of arbitration of the Chamber of Commerce of the State of New York submitted a plan for international commercial arbitration, a system which certainly ought to work as well between citizens of different countries as it does between citizens of the same country—where it has been found to be efficient and satisfactory, and a vast improvement over resort to the courts.

There is not a people on the face of the earth that is not worth knowing; and there isn't a nation that hasn't something which we ought to have, and that hasn't some want which we ought to supply. In a business way we probably know more than, say—taking a couple of the participants in the congress at random—Peru and Portugal, but we can learn something from them, and we can teach them, possibly, quite a good deal. And both of these are very satisfying achievements. These annual commercial congresses are, in the language of the street, "all to the good."

AND WHY NOT RUBBER TENNIS COURTS?

EVERY new rubber exposition brings its distinct novelties. Probably not the most important, but certainly one of the most interesting innovations of the rubber exposition now in progress in London, is the rubber tennis court, contributed for the occasion by one of the large English manufacturers in conjunction with the Rubber Growers' Association of London. The court is constructed of slabs of rubber, colored green, to be pleasing to the eye, and marked off with inlaid strips of white rubber. This court is receiving a thorough trial, both from amateur and professional players, and their verdict will be awaited with interest.

But in the meantime, viewed from this dispassionate distance, a rubber tennis court certainly seems feasible. Its original cost of course would considerably exceed that of a dirt court or of one laid out on a lawn, but on the other hand its permanency would be vastly greater; and there would be additional advantages—for instance,

in its dustlessness and in its obviation of the perpetual remarking of the lines. Then again, it would be more comfortable to the players' feet than a court with a hard surface, and would be considerably more conducive to the preservation of one's equanimity under those mishaps—which will occur in the best regulated games—where the player involuntarily comes down on some super-sensitive part of his person.

A resilient court would undoubtedly add considerably to the liveliness of the ball, and this perhaps would seem objectionable to players accustomed to a less responsive ground. But it would be as fair for one as for the other. In any event this rubber tennis court connected with the London show is something that will interest not only those addicted to the popular and salubrious game of tennis, but even more the producers of rubber; for if all the tennis courts in the world, or even one in a hundred of them, were to be laid with rubber, a new use would be found for this product of very pleasing proportions and far reaching possibilities.

BRAZIL TO BORROW A HUNDRED MILLION MORE.

BRAZIL has been casting about for some time to see where she could borrow \$100,000,000 to pay off some rather pressing matters. England has been Brazil's source of financial supply for a long time, but England already has over half a billion dollars invested in one way and another in that country and apparently begins to feel rather conservative regarding further advances. Moreover, the Brazilian government now has a foreign indebtedness of over four hundred million dollars, and last year its expenditures exceeded its income by over eleven million. German financiers have been appealed to but have not proved particularly responsive.

It appears now, however, that this loan will be made, not by the financiers of any one country, but by an international group of bankers, probably about the same group as co-operated to assist China. It is stated that some of the large New York banking interests will participate in this Brazilian financing to the extent of twenty million dollars. Under just what terms this loan will be made does not yet appear, but the probability is, under existing conditions, that they will be fairly onerous.

It is unfortunate that Brazil, with her vast wealth in rubber trees, not ten per cent. of which have probably yet been touched, and with her great coffee product and other wonderful resources, should be compelled to burden herself with debt.

THE DEMORALIZING FORCE OF HOLIDAYS.

THE medical superintendent of a large manufacturing corporation, in a recent address before an efficiency society, discussed the relation existing between the weekly day of rest and the effectiveness of the workman. He had kept a careful record of 1,300 accidents in the plant with which he was connected and found that of this num-

ber 253 occurred on Mondays, 196 on Tuesdays, 194 on Wednesdays, 197 on Thursdays, 195 on Fridays and 265 on Saturdays. That is, from Tuesday to Friday, inclusive, the average number per day was practically the same, varying only from 194 to 197, while on Saturday the number increased over 35 per cent. and on Monday was 30 per cent. above the normal. The explanation given by the doctor—which would be obvious without any expert authority—lies in the fact that on Saturday the workman has his mind on the coming holiday rather than upon his work, while on Monday he has not yet recovered from the strain and fatigue of the "day of rest."

These same conditions hold good to even a greater extent with the annual two weeks' vacation. Without any statistical table for reference, everyone knows that the efficiency of the workman, whether in clerical or factory capacity, is greatly diminished during the week or two before the summer holiday and during the week or two succeeding it—for the very palpable reason that preceding the vacation one's mind is naturally on time tables, hotel rates and similar preparatory details, and following the vacation some time is required to get the harness comfortably adjusted again.

But this is by no means an argument in favor of abandoning either the weekly or the annual summer holiday. Both are not only beneficial but essential. It is, rather, a mild suggestion to the workman, whether his work be mental or manual, that he should enter upon the enjoyment of his holidays with a rational regard for the maximum amount of benefit to be derived from them. Let him temper his relaxation with moderation and not rest with too much strenuousness.

PRESIDENT PENA, OF ARGENTINA, IN A BOOK WHICH is a long farrago of historical inaccuracies and unwarranted assumptions, says that the Monroe Doctrine should be called the gutta-percha doctrine because it is so elastic that it can be stretched to any conceivable degree or returned to convenient length. President Pena clearly knows about as much about gutta-percha as he does about history or the proprieties of the great office he holds. It is a matter of plain history that the United States has interposed on various occasions to protect the states of Latin America from subjection or dismemberment. It has spent blood and treasure for their freedom and stands ready to do it again. So far from coveting the soil of its neighbors it has more than once rejected proposals of annexation made by the countries to the South. Intelligent and informed Latin Americans know all this to be true, but unfortunately all Latin Americans do not come under that description. And there is another class of Latin American politicians—those who resent the fact that the United States stands ready to block any traitorous plan which these politicians would like to carry out in selling their own or a neighboring country to the highest European bidder for naval bases or colonies. Hence these tears. Pena in Spanish means pain.

New Uses for India Rubber.

The Editor of THE INDIA RUBBER WORLD prepared this article some months ago. In view of the fact, however, that there was to be a competition on this subject at the Rubber Exhibition in London, it was not published. By the time this reaches England the Exhibition will be over, and these suggestions will not be in the way of an anti-climax.

INDIA rubber is the Jacob, the supplanter, of the industrial world. Rubber hose dispossessed hose of leather, the rubber-covered golf ball drove out the "gutter," the motor tire banished the horse. No industry or profession but has shown rubber supplanting some time-honored object. Take, for example, the case of King David as chronicled in the first book of Kings. "David was old and stricken in years and they covered him with clothes, but he gat no heat." Then his servants got a young maid who lay in his bosom to warm him. This system presumably prevailed among elderly kings until 1850 or thereabouts, when india rubber in the form of the hot water bottle supplanted the feminine heat supplier, and has done so, to a degree, ever since.

Industrially it has insinuated itself everywhere, displacing wood, metals, fabrics and only rarely making a new and original use for its wonderfully adaptable self. It was its costliness only that kept it from further encroachment.

With rubber at a shilling or twenty-five cents a pound (and that is where it is said to be going), the great expansion in its manufacture will be in the line of further and greater encroachment.

Let's afield with fancy and picture its progress:

The growth that will come in automobile and motor truck tires has already been forecasted, but the impetus to be given to other established lines does not seem to be appreciated. All will grow greatly. The only obstacles are the increasing cost of labor—which is the most serious—and high prices for fabrics, solvents and ingredients.

INDIA RUBBER LEATHER.

In footwear of leather, rubber has already made itself a factor.

Aside from the cements used in channeling and filling, the rubber heel and sole have displaced quite a percentage of those made of leather. With low-priced, high-grade rubber, leather in soles for footwear, material for trunks, straps and a score of other uses, including machine belting and harnesses, is sure to give way to its more adaptable rival. As for shoe uppers, leather is used theoretically because of its porosity that allows heated air to escape and absorbs perspiration—this in spite of the fact that the leather is filled with oil and blacked and varnished. It is quite possible that a mixture of fibre and rubber will appear that will be cool, odorless and blackable.

As for patent leather, it is sure to be supplanted by a smooth, glossy-surfaced rubber product on a cloth backing that will not crack and will be far cheaper than the high-priced leather products. This will open a field in footwear, shopping bags, ladies' belts, etc., etc.

Indeed, wherever leather is used today rubber will soon prove a formidable rival.

INDIA RUBBER LUMBER.

Mats, matting and tiling of india rubber are already extensive factors in home, office and factory furnishing. But why not flooring of hard or semi-hard rubber? As has been proved in tests of tiling wear, it will outlast stone or wood. It can be made in any color. Certainly at the present price of hardwood flooring, with rubber at 25 cents a pound, it could compete. Nor would it need varnishing, waxing or oiling—simply polishing. It could easily be molded with a semi-hard lower side for nailing and be matched and fur-

nished in strips of any length or width. It would be practically fireproof, and not inflammable as is varnish-covered wood, and would neither swell nor shrink, as it would be moisture proof and vermin proof. For a white-ant country it would be invaluable. In cabinet work, hard rubber veneers to imitate ebony, mahogany, bog oak or any of the darker woods are easily made and the richest effects secured. For furniture, solid mahogany sideboards, tables and chairs may be superseded by those made of hard rubber.

In other words, hard rubber lumber is in sight—the lumber sawed, planed and turned as lumber is today and the sawdust not a waste product but molded into new lumber, and the furniture or panels or flooring after use returned to the mill that made them, and these, too, made into just as good hard rubber lumber as when first manufactured.

Better than rubber roofing will be the fibre and rubber shingles of the future. If the underwriters are fussy the fibre may be asbestos or the compounding ingredient infusorial earth.

Boat builders (wooden boats) have trouble with their lumber. When hard rubber lumber is available they will rejoice. It will be hard on those who copper sheath, or sell Anti-Torpedo paints; for the busy water borer will not touch rubber.

Speaking of hard rubber lumber, who can say that a factory for turning it out will not one day be established in Singapore, to make boxes in which to ship rubber? The boxes of course to be sawed up into short vulcanite sheets for insulation work, once their duty as rubber carriers is finished. At least it would not be difficult to make wooden boxes with a thin coating of hard rubber vulcanized to the wood, forming a clean anti-sliver coating. Such boxes could easily be ventilated and should find use when empty.

Great European ports send to South America for Greenheart logs to build their docks, and a costly product it is. Iron columns covered with a thin film of hard rubber should be cheaper and far more durable. So, too, the protection of iron and steel in scores of places where they perish from oxidation would prove a simple, effective solution of this evil.

SEMI-HARD PIPE.

As liquid conductors there is a possibility that semi-hard rubber piping may compete with copper and lead pipes. So, too, lead-armored cables may give way to those coated with semi-hard rubber. The product would be just as flexible, much lighter, and cheaper.

INDIA RUBBER WOODENWARE.

In the line of sports will come hard rubber golf clubs, cricket and baseball bats, fishing rods, polo mallets and balls, and so on. The city policemen will no longer use a club of locust wood; it will be of hard rubber. And this will extend all through the line of woodenware where anything especially tough, flawless and fine is required.

RUBBER LINOLEUM AND OIL CLOTH.

Speaking again of floor coverings, oil cloth and linoleum as such cannot exist once rubber is really cheap and plentiful. Every rubber manufacturer knows that a pound of Pará rubber will go as far in compounding as ten pounds of boiled or oxidized oil. The oil costs, say, seven cents a pound, and rubber at less than four times that price will certainly

dispossess it. Then, too, it is more flexible, easier to work and far more durable.

Artificial leathers are likely to find it difficult to compete with the rubber product that will come in with low-priced rubber. Indeed, all of the rubber counterfeits made of cellulose, celluloid or casein, whether soft or hard, are likely to find that the original will be preferred just as soon as it is the cheapest.

RUBBER SOUND DESTROYERS

India rubber as a deterrent to noise has gone far. It will go farther. The rubber-shod taxicab has stilled the echoing klipperty-klip of the flat-footed cab horse. It should be used to silence the clash and clatter of the modern city electric car and the jar and clamor of elevated and subway trains. In a score of industries it is needed—as cushions under modern printing presses, laundry machines and other city nuisances.

Would it not be possible also to still the shrill clatter of the thousands of shuttles in great weaving plants by the use of rubber?

The boiler maker certainly needs some sort of rubber silencer for his work, and the pneumatic riveter will not be perfect until rubber cushions absorb the far reaching sound of its blows.

When this is accomplished and the day of deliverance comes, every bell in Christendom should send out its peal of praise—with soft rubber tongues.

RUBBER GLUE AND MUCILAGE.

Into the broad field of glues, mucilages and other adhesives will a great variety of new rubber cements force their way. The only deterrent will be the high cost of solvent. But with low-priced *Hevea* rubber and the consequent fall in the price of rubber scrap, that will be melted or distilled, and new stickers and valuable by-products will be obtained that will find wide markets. Certainly a rubber glue that would be self-vulcanizing and that would not soften and let go in damp weather would be a boon.

INDIA RUBBER ROADS.

Roadways of rubber are ideal, theoretically, but the as-

phalts under modern manipulation are likely to be always cheaper and just as effective. Rubber sidewalks (once a non-slippery compound is evolved) made of scrap are likely one day to run for miles in the modern city.

INDIA RUBBER PAINTS.

These have in the past been widely advertised and sold, but they were oil or asphaltum at heart, not rubber. Scrap rubber is likely to furnish actual rubber paints and real rubber roofing. It will mean experiment and adjustment and a new series of dryers, but that should not baffle the chemist in this day of rubber expansion.

RUBBER CAR SPRINGS.

As the price of rubber in the past increased certain products disappeared—the rubber car spring for example. As an assistant for the excellent steel springs of today, with a new and lower scale of prices it will come back, not only in railway carriages, but in manifold places where cost has prevented its use. Wherever there is a shock there will be put a rubber spring; wherever a rattle, an anti-rattler.

INDIA RUBBER PAPER.

Goodyear had a book with pages of rubber and fibre. Then rubber became costly and it was forgotten. For certain moisture proof papers rubber is certainly better than oil. In wall papers of the Lincrusta Walton type it is more than a possibility. Bible papers made of pure gum would be wonderfully suited to certain modern creeds.

RUBBER CROCKERY.

It is with much doubt that I make this suggestion—that of white rubber dishes for the great restaurants, or bath tubs of hard rubber for the home. Perhaps it is as well not to encroach upon the pottery industry until rubber becomes as cheap as Kaolin.

The list grows long, and this is but a beginning; there are scores of industries yet to be viewed, and above all the back bone of all prosperity—the farmer—has been neglected. Perhaps—and this is but a vague suggestion—if he raised his milk-fed chickens on rubber latex, egg shells would cease to be fragile.

The Crude Rubber Export Taxes of the World.

IN the January issue of THE INDIA RUBBER WORLD there was a table covering ten pages giving the rubber tariffs on manufactured goods of eighteen foreign countries, each of which imported American rubber goods in excess of an annual value of \$100,000. It was the first time any such comprehensive tabulation had ever been attempted, and it created considerable comment and has proved of great value to American manufacturers, who can tell by reference to this table just what obstacles they have to contend with in introducing their goods into foreign markets.

We present in this issue a table showing the export duties levied on crude rubber in all the countries of the world from which any shipments of rubber are made. This tabulation is divided into four general groups—Central America, South America, Africa and the East—and includes seven countries in Central America; six in South America; twenty-six countries, colonies and provinces in Africa, and twenty-two countries, dependencies and islands in the East and Far East. This is the first time that a comprehensive survey of crude rubber export tariffs has ever been made, and while this may not prove of the same value to American manufacturers as the table of import tariffs which appeared in January, it will certainly be of great interest to all men associated with the rubber industry, as showing the burden with which rubber starts for its

market from the various ports from which it is shipped.

An impressive feature of this tabulation is the unevenness of this system of taxation, a number of countries exporting their rubber entirely free of tax, others paying so slight a duty that it is almost negligible, while in other cases, as in exports from Pará, for instance, the burden is really onerous. Comparing the exports of rubber from Pará, on which the tax, all told, including federal, state and local levies, amounts to over 40 per cent., with the free condition of rubber leaving the Straits Settlements and Ceylon and the very light burden laid upon it in other eastern points, it becomes obvious why the country of the Amazon finds it so difficult to compete with the plantation rubber of the East. But the various Brazilian authorities are already taking steps materially to decrease the present export burden on the rubber of the Amazon.

As the monetary denominations and the system of weights used in the various countries mentioned in the table are nearly all different from those used in this country, American equivalents are given in every case; and where the duty is a specific one it is given first in the currency and in the weights prevailing in the respective countries, and then in a parallel column the equivalents in American currency and avoirdupois weight are given. Where the duty is ad valorem, of course a parallel column of equivalents is not necessary.

CENTRAL AMERICA:**MEXICO.***Equivalents in American denominations.*

The monetary unit is the value peso of 100 centavos, = 50 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duties per 1,000 kilos.	Equivalent in U. S. currency per 100 lbs.
Gum arabic, in bag		
Raw state or crushed (gross)	15 pesos	\$0.34
Chicle		
Rubber		

GUATEMALA.*Equivalents in American denominations.*

Currency is the paper dollar, average value 5½ cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty per quintal (100 lbs.).	Equivalent in U. S. currency per 100 lbs.
Rubber	10 pesos	\$0.55

HONDURAS.*Equivalents in American denominations.*

The monetary unit is the silver peso of 100 centavos, = 40 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duties per quintal (100 lbs.).	Equivalent in U. S. currency per 100 lbs.
Rubber	3 pesos	\$1.20
Chicle	1 peso	.40

BRITISH HONDURAS.*Equivalents in American denominations.*

Monetary unit is the dollar of 100 cents, = the United States dollar. Weights and measures same as Great Britain; Hundredweight = 112 lbs.; ton = 2,240 pounds.

	Duty per pound.	Equivalent in U. S. currency per 100 lbs.
Chicle	½ cent	\$0.50
Crude rubber	free	free

NICARAGUA.*Equivalents in American denominations.*

The monetary unit is the silver dollar of 100 centavos, = 40 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty per pound.	Equivalent in U. S. currency per 100 lbs.
Rubber	4 centavos	\$1.60
"Limo"	½ centavo	.20

SALVADOR.*Equivalents in American denominations.*

The monetary unit is the peso of 100 centavos, the real value of which is about 38 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty per quintal (100 lbs.) (gross) payable in silver.	Equivalent in U. S. currency per 100 lbs.
Rubber (hule),	10 pesos	\$3.80

COSTA RICA.*Equivalents in American denominations.*

The monetary unit is the gold colon of 100 centavos, = 45½ cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty per kilo.	Equivalent in U. S. currency per 100 lbs.
Rubber	1 centavo	\$0.21

SOUTH AMERICA:**VENEZUELA.***Equivalents in American denominations.*

The monetary unit is the bolivar of 100 centimes, = 19 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	100 kilos.	Equivalent in U. S. currency per 100 lbs.
Rubber		

BRITISH GUIANA.

The metric system of weights and measures same as Great Britain; Hundredweight = 112 pounds; ton = 2,240 pounds.

	Duty per pound.	Equivalent in U. S. currency per 100 lbs.
Rubber from crown		
Rubber from crown		
Rubber from crown		
(Otherwise free.)		

DUTCH GUIANA AND FRENCH GUIANA.

There is no export duty on rubber or balata in Dutch Guiana, Trinidad or Tobago. In French Guiana there is a small government tax.

BRAZIL.*Equivalents in American denominations.*

The gold milreis of 1,000 reis = 54 cents United States currency per value, 32.4 cents exchange value; the metric system of weights and measures; Kilo = 2.2 pounds.

The export taxes are levied on the "Pauta" or official weekly average price of rubber. In Pará both federal and state taxes are levied on rubber exports; in Amazonas only a state tax is levied; in Acre only the federal tax, while in Bahia state and municipal taxes are levied on all rubber exports. Detailed table is given below:

	Duty ad valorem, per cent.
Pará	
Federal tax, on all grades	18
State taxes: Fine and coarse rubber and	
canele	19½
Fine rubber sheet, coarse	
and canele washed	18
Additional taxes, State	
H. S. 12.1	2½
"Ex. 12.1" Exchange	
building	3 to 4
Mayorality	1
Amazonas	
State tax, on all grades	14
Acre	
Federal tax	20
Bahia	
State and municipal tax on all grades	
of Bahia	14

PERU.*Equivalents in American denominations.*

The monetary unit is the gold libra or English sovereign. It is divided into 10 soles of 100 centavos; 1 sol = \$0.486. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty ad valorem, per cent.
Rubber	

ECUADOR.*Equivalents in American denominations.*

The monetary unit is the sucre of 100 centavos, actual value of which is about 44½ cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty.	Equivalent in U. S. currency per 100 lbs.
Rubber	15 centavos per Kilo	\$3.00
Surcharges, various,		
amounting to	8 centavos per Kilo	1.62

Additional special duties:

	Duty.	Equivalent in U. S. currency per 100 lbs.
Exports from—		
Bahia and Caraquez, 1 sucre per quintal		.44
Manali	50 centavos per Kilo	10.00
Santa Elena	½ centavo per Kilo	.11

COLOMBIA.

No export tax on rubber.

BOLIVIA.

The monetary unit is the Boliviano of 100 centavos, equaling 39 cents United States currency. One American dollar = 2.50 Bolivianos. The metric system of weights and measures.

The export tax on rubber is collected on the following scale of values:

	Duty ad valorem, per cent.
When quotation of rubber is from 51 to 73 cents	2
When quotation of rubber is from 75 to 97 cents	4
When quotation of rubber exceeds 99 cents	6

The export tax on rubber is collected on the export of the ordinary classes (Sernamby, Mollendo and Caicho), with the rebate of 30 per cent. on the value fixed for fine rubber.

In case the tax imposed by neighboring foreign custom houses is less than that of Bolivia, the Executive Power can make a proportionate reduction in the rubber export duties.

In fixing the official value 70 per cent. of the London market is taken, quotations being transmitted every fortnight by the Bolivian consulate in London.

AFRICA:**GERMAN EAST AFRICA.***Equivalents in American denominations.*

The monetary unit is the rupee of 100 heller = 32.4 cents United States currency; replaces rupee of 64 pesa.

	Duty per 100 lbs.	Equivalent in U. S. currency per 100 lbs.
Rubber	18 rupees.	\$5.83
Rubber obtained from plantations	Free, but subject to statistical fee of 8 pesa per 100 rupees or part of 100 rupees.	1 cent. ad valorem.

GERMAN WEST AFRICA (KAMERUN).*Equivalents in American denominations.*

Reichsmark of 100 pfennigs = 24.3 cents United States currency. The metric system of weights and measures.

	Duty ad valorem, per cent.
Rubber on basis of 4 marks per Kilo (or 44 cents per pound)	10
Rubber harvested in plantations free of duty, on compliance with special regulations.	

FRENCH CONGO.*Equivalents in American denominations.*

The monetary unit is the franc of 100 centimes = 19 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

The following duties are to be paid on exports by land or sea from French Equatorial Africa, including the territories of Gaboon:

	Duty ad valorem, per cent.
Rubber	10

BELGIAN CONGO.*Equivalents in American denominations.*

Current money is the franc of 100 centimes = 19 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty.	Equivalent in U. S. currency per 100 lbs.
Grass rubber when price is not over 3 francs per Kilo (26 cents per lb.)	free	free

over 5 francs per Kilo (45 cents)	free	free
francs per Kilo, but not exceeding 12 francs (\$1.08 per lb.)	f. 0.35	\$0.40
francs per Kilo, but not exceeding 12 francs (\$1.08 per lb.)	f. 1.00	\$0.08
francs per Kilo (\$1.08 per lb.)	f. 1.25	\$0.10
Plantation rubber	free	free

At the same time as the export duties, the following special duties are collected on rubber, except plantation rubber collected in the colony. They are payable according to weight of product ascertained on exportation.

	Duty per Kilo.	Equivalent in U. S. currency per 100 lbs.
Grass rubber.....	f. 0.50	\$4.30
Tree or vine rubber. f. 0.75		\$6.40

For all products not exported in bulk the declaration must state the gross weight of the packages, and the collector will calculate the net dutiable weight by deducting from the gross weight the following rates:

For packings of canvas. 3 per cent. of gross weight		
" " mats... 6 " " "		

Rubber passing through Leopoldville in transit, whether up or down the river, shall pay for handling and warehousing, irrespective of duration, a sole tax of f. 0.12 per Kilo (= \$1.00 per 100 pounds).

FRENCH WEST AFRICA.

(Including Senegal, French Guinea, Ivory Coast, Dahomey, the Upper Senegal and Niger, and the civil district of Mauritania.)

The monetary unit is the franc of 100 centimes = 19 cents United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty ad valorem, per cent.
Rubber, duty to be assessed on value at exportation	7

FRENCH PROTECTORATE ON LAKE CHAD.

Money, weights and measures as in French West Africa.

	Duty ad valorem, per cent.
Rubber duty to be collected on basis of 4 francs per Kilo, or 33 cents per pound.	10

MADAGASCAR AND DEPENDENCIES.

Money, weights and measures as in French West Africa.

	Duty per Kilo, net.	Equivalent in U. S. currency per 100 lbs.
Rubber (to be levied only to December 31, 1914)...	40 centimes	\$3.40

PORTUGUESE SOUTH EAST AFRICA.

This includes Mozambique, Lourenço Marques and Inhambane, but excepting territories of the Mozambique Co.

The monetary unit is the Milreis of 1,000 reis = \$1.07 United States currency. Public accounts kept since July 1, 1913, in escudos of 100 centavos, corresponding with former milreis. The metric system of weights and measures; Kilo = 2.2 pounds.

	Duty ad valorem, per cent.
Rubber to foreign ports.....	8
Rubber to Portuguese ports.....	6

PORTUGUESE SOUTH WEST AFRICA.

This includes Angola, Districts of Luanda, Benguela and Mossamedes.

Equivalents in American denominations.

Money, weights and measures same as in Portuguese South East Africa.

	Duty ad valorem, per cent.
Rubber from Luanda.....	9
Rubber from Benguela and Mossamedes.....	12

MOZAMBIQUE.

This includes Manica, Sofala and territories of the Portuguese Mozambique Co.

Money, weights and measures same as in French West Africa.

	Duty ad valorem, per cent.
Rubber of all kinds.....	8

QUILIMANE, CHINDE AND ZAMBEZIA (PORTUGUESE).

Money, weights and measures same as in French West Africa.

	Duty ad valorem, per cent.
Rubber for foreign ports.....	8
Rubber for Portuguese ports.....	6

BRITISH NYASALAND (LATE BRITISH CENTRAL AFRICA).

Equivalents in American denominations.

Money, weights and measures same as Great Britain. Penny = 2 cents; hundredweight = 112 pounds; ton = 2,240 pounds.

	Duty per U. S. currency pound.	Equivalent in per 100 lbs.
Rubber other than rubber collected from cultivated trees or plants.....	4 pence	\$8.11

BRITISH EAST AFRICA.

Equivalents in American denominations.

Rupee of 100 cents = \$0.324. Weights and measures same as Great Britain; hundredweight = 112 pounds; ton = 2,240 pounds.

	Duty ad valorem, per cent.
India rubber (other than rubber obtained from a plantation created in open land, not in connection with the lease of a forest).....	10

UGANDA PROTECTORATE.

Equivalents in American denominations.

Rupee of 100 cents = \$0.324 United States currency. Weights and measures same as Great Britain; hundredweight = 112 pounds; ton = 2,240 pounds.

	Duty ad valorem, per cent.
Rubber, other than plantation rubber....	10

LIBERIA.

Monetary unit = American dollar of 100 cents. All weights reckoned avoirdupois.

	Duty per pound.	Equivalent in U. S. currency per 100 lbs.
Rubber .....	.12	\$12
Gutta percha.....	.12	\$12

SOMALILAND PROTECTORATE, ZANZIBAR PROTECTORATE, SIERRA LEONE, GOLD COAST, GAMBIA, NIGERIA (NORTH AND SOUTH).

Rubber is free from export duties in all the above countries.

THE EAST.

DUTCH EAST INDIES.

Equivalents in American denominations.

The monetary unit is the Dutch florin of 100 cents = \$0.405 United States currency. The metric system of weights and measures; Kilo = 2.2 pounds.

In article 5 of Indian Tariff Law, November 3, 1909, the Governor General is authorized to levy in the regions enumerated in article 1, viz.: West coast of Sumatra, Residencies of Tapanuli, Sirgkel, Benkulen, Lampong, Palembang, Banka, Billiton and South and East division of Borneo, duties not exceeding 10 per cent. on *getah* rubber and other gums and resins. Ordinances of December 7, 1910, and April 18, 1911, provide under Tariffs I, II, III and IV for rubber and gutta percha, and other substances included in "*getah*."

	Duty ad valorem, per cent.
--	----------------------------

I. West coast of Sumatra and Celebes, Island and Dependencies, Residencies of Tapanuli, Benkulen; Districts of Lampong, Palembang, Djambi; Banka and Dependencies; West Division of Borneo, Menado, Amboina; Ternate and Timor and Dependencies, and Billiton..... 5

II. South and East Division of Borneo.. 8

III. Portion of East Coast of Sumatra included in customs territory; Indragiri Division, Kateman Territory, and Danei of Karimung Division of Residency of Riau and its Dependencies. 8

IV. Government of Atjeh and Dependencies, Singkel Subdivision..... 5

Grand Atjeh Division except Waay..... 10

Other portions of government except Waay..... 10

A special exemption is made as to Tariffs I, II, III, IV in the case of gutta percha extracted by some industrial process from the leaves of the gutta percha trees, and also in favor of rubber and gutta percha constituting the output of undertakings for the methodical plantation of vegetable products yielding gutta percha and rubber, provided that in both cases the exemption be warranted by production of a certificate issued by a European official in charge of the administration.

JAVA AND MADURA.

Rubber free from duty, but Governor has right to impose a tax.

FEDERATED MALAY STATES—PAHANG, NEGRI SEMBILAN, PERAK, SELANGOR.

Equivalents in American denominations.

Standard coin is Straits Settlements silver dollar = \$0.567 United States currency. Weights: Picul = 133 1/3 pounds avoirdupois; Kati = 1 1/2 pounds avoirdupois; Kilo = 2.2 pounds.

	Duty per picul	Equivalent in U. S. currency per 100 lbs.
Jelutong	50 cents (Straits)	21 cents

Gutta percha as defined in Forest Rules, 1909, as other than "gutta percha cultivated"; also bark and any other part of trees yielding such gutta percha.... 10

Gutta percha cultivated on alienated land to satisfaction of resident..... 2 1/2

Any cultivated rubber..... 2 1/2

Latex (a gallon of latex being equivalent to a pound of cultivated rubber of the best quality)..... 2 1/2

PROTECTED MALAY STATES—KEDAH.

Equivalents in American denominations.

The standard coin is the Straits Settlements dollar = \$0.567 United States currency. Picul = 133 1/3 pounds avoirdupois; Kilo = 2.2 pounds.

	Duty ad valorem, per cent.
Rubber, wild.....	15
Rubber, plantation.....	2 1/2

PERLIS, TRENGGANU, KELANTAN.

There is no duty on rubber exports from these provinces.

BRITISH NORTH BORNEO.

Equivalents in American denominations.

The standard coin is the Straits Settlements dollar = \$0.567 United States currency. Picul = 133 1/3 pounds avoirdupois.

	Duty ad valorem, per cent.
Gutta percha, red.....	10
Gutta percha, white.....	10
India rubber, other than cultivated....	10
Cultivated rubber.....	free

(For other parts of Borneo see Dutch East Indies.)

SARAWAK.

Equivalents in American denominations.

Straits Settlements dollar = \$0.567 United States currency. Picul = 133 1/3 pounds avoirdupois.

	Duty per picul.	Equivalent in U. S. currency per 100 lbs.
Gutta Jelutong	\$0.40	\$0.17
Gutta Jangkar	1.50	.64
All other kinds.....	8.00	3.40
India rubber.....	10.00	4.25

COUNTRIES FREE FROM EXPORT DUTY.

There is no export duty on rubber from the following countries: British India, Ceylon, Beluchistan, Aden, French Indo China, Siam, Papua, Straits Settlements; or from the Islands of Fiji, Solomon, Gilbert and Ellice, Norfolk, Tonga, New Hebrides, Samoa, Seychelles.

The Making of a Fountain Pen.

THAT gold mine of valuable information, the Bureau of Foreign and Domestic Commerce, of Washington, recently announced that the export of fountain pens from the United States reached a total of 309,200 for the last fiscal year; over half of these pens, or 169,000, going to England, about 50,000 to Canada, 30,000 to France and the rest being scattered all over the globe.

Very few people have any conception of the extent of the fountain pen industry in the United States. The Waterman company alone had an output last year of 2,500,000 pens; and as these pens retailed at anywhere from \$3 to \$4, it is safe to say that the market value of this company's product for 1913 was somewhere from \$8,000,000 to \$10,000,000. And it is probably safe to say that, including all makes and brands of fountain pens made in this country, the yearly product would reach 7,000,000 or 8,000,000 pens. So that it will be seen at a glance that the fountain pen, which, with the exception of the gold pen point, is entirely of rubber, has become quite an important article of manufacture in the hard rubber industry.

It often happens that there is vastly more detail to a small article than there is to a big one. For instance, there is a great deal more detail to a watch than there is to a bath tub. Now the fountain pen can be slipped into the pocket and not be felt and yet there is a great deal of labor involved in its construction. The process of its manufacture is interesting enough to serve as an excuse for going a little into detail as to how these pens are made.

ROLLING THE RUBBER INTO SHEETS.

The rubber goes through the usual processes of washing, drying and mixing, the proportion of sulphur being about 33 per cent. of the weight of the rubber. From the mixing mill the rubber is passed through sheeting rolls, as shown in Figure 2, and the sheets are cut into strips which form the barrel and cap of the fountain pen. These strips are rolled on small spindles of the required diameter, the rolling being done on a heated, smooth steel table. Foil is wound over the rubber, and the spindles, with their rubber covers, are deposited in steel boxes and buried in powdered soapstone. These boxes are put

in vulcanizers, the open steam cure being 300 degrees for about 14 hours.

The rubber should be hard enough to keep its shape and yet must have sufficient resiliency so that all the joints will fit to-

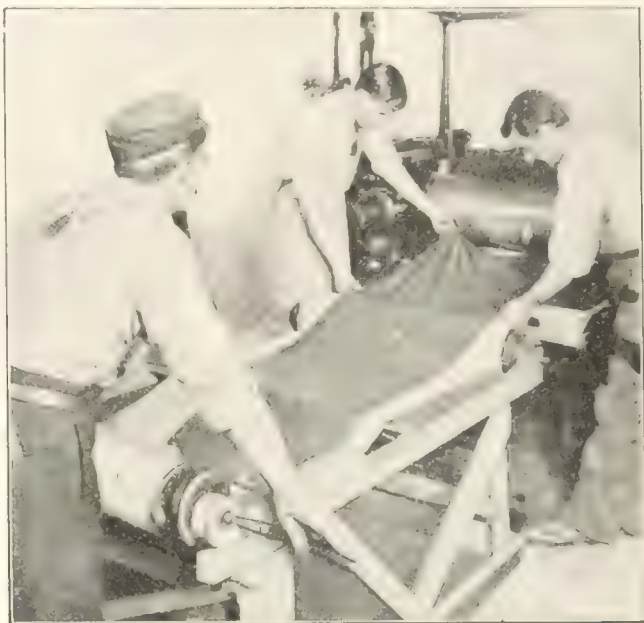


FIG. 2. ROLLING THE RUBBER OUT INTO SHEETS OF THE REQUIRED THICKNESS.

gether ink-tight. In other words, it will not do to vulcanize the pens too hard.

While considerable machinery is used, there is much hand work that requires exceptional skill, for, with the exception of the chasing, all the work after the pen has been vulcanized requires a combination of delicate mechanisms and skilled workmanship.

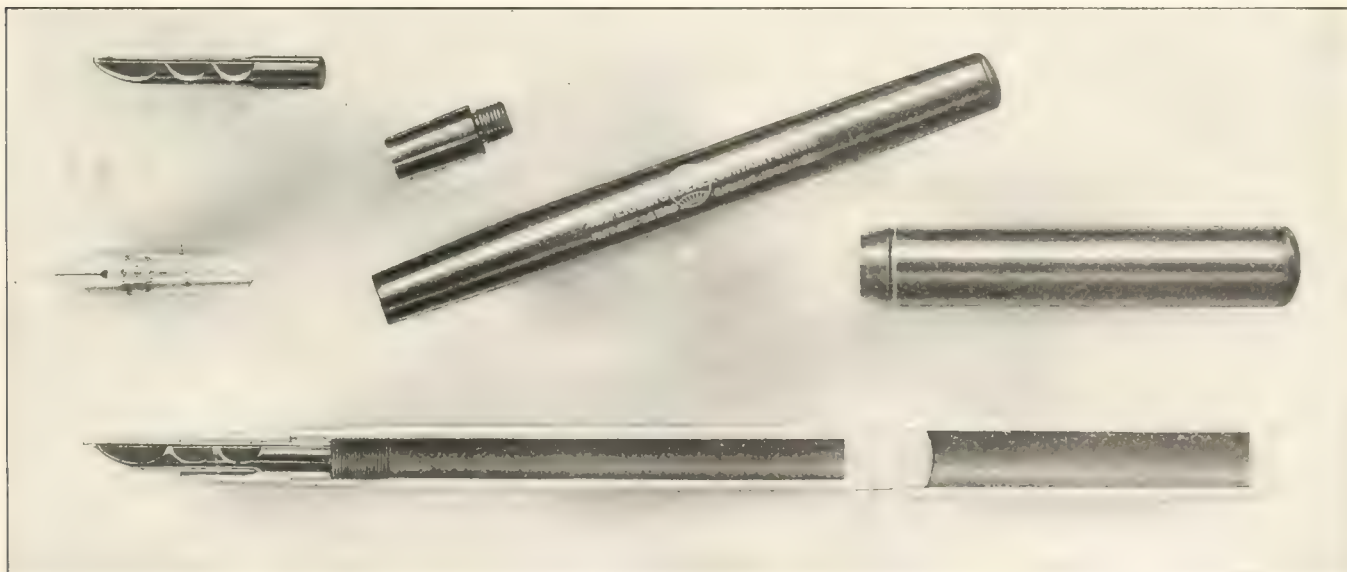


FIG. 1. COMPONENT PARTS OF THE FOUNTAIN PEN. A IS THE CAP, B, THE BARREL, C, THE PEN SECTION; D, THE "SPOON" FEED; E, THE PEN POINT; AND F, A SECTIONAL VIEW OF THE ASSEMBLED PARTS.

Figures 3 and 4 give a detailed view of the turning of the cap and of the barrel of the pen.

TURNING THE RUBBER CAP AND BARREL

The rubber cap, shown at A in Figure 1, is made from a cup, and for the rough-turning operation is placed on an arbor B as shown in Figure 3. The turning is accomplished with a flat hand tool C, the operator holding it in one hand, guiding it with the thumb of the other hand. The tool is held on a rest D, the

by the way, on which the various parts of the pen are turned, are rotated at about 2,000 revolutions per minute.

The spoon feed, which is marked D in Figure 1, conveys the ink from the barrel to the pen point. This is also made of solid rubber. This is a most important part of the pen and requires extremely accurate and careful work, for the feed pockets, the air vent and the ink fissure ducts must all be cut in their proper places with absolute accuracy.



FIG. 3. ROUGH-TURNING THE RUBBER CAP.



FIG. 4. TAPERING ENDS OF RUBBER BARREL.

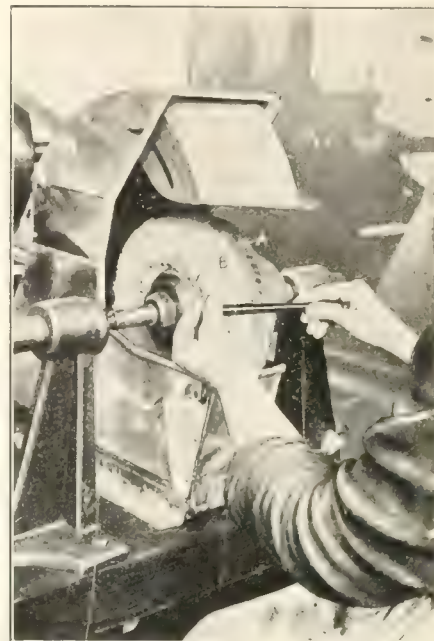


FIG. 5. POLISHING THE RUBBER PEN PARTS.

cutting edge being slightly above the center of the work. The cap is finish-turned with hand tools, after which it is tapered so that the hole in the cap will fit the tapered ends of the barrel.

The rubber barrel shown at B in Figure 1 is rough-turned in a lathe in a similar manner to the cap. The next operation on the barrel is to finish the two tapering ends; one end must fit the taper on the point section, while both ends must fit the tapered hole in the cap. This is accomplished as shown in Figure 4. The barrel A is held in a chuck B in a small turning machine, and the operator, by means of a flat hand tool C, turns down the tapered ends to the required taper and diameter. The tool is held on a rest D, and the taper is governed entirely by presenting the tool at the required angle.

After the front end has been turned, the barrel is reversed and the rear end is turned taper and rounded off. The barrel is then ready for reaming and tapping. The reaming is done with an ordinary flat reamer in a speed lathe, while the tapping is accomplished with a tap provided with only two rows of teeth, or, in other words, two cutting edges, the tap being practically flat.

MAKING THE POINT SECTION AND THE FEEDS.

The point section, which is marked C in Figure 1, is that part of the pen which holds the nib and the feed. This is put on a lathe and properly turned, and the threading is also done with an ordinary flat chaser similar to that used by brass finishers. The thread on the point section of course must be perfect, so that it will absolutely fit the thread of the barrel, permitting no ink to escape. After the thread has been cut the front end is reamed to fit the feed and pen point, and the external diameter is taper-turned to fit the taper on the barrel. These lathes,

POLISHING THE RUBBER PARTS.

All the rubber parts of the pen have now been made, but are in a rough condition. The first polishing operation consists in holding the rubber pen parts on arbors, and turning them around by hand while they rest on a wet carpet-wheel buff on which water is flowing. Ashes and powdered pumice stone are applied to this carpet buff, which removes all tool marks but does not give a glossy or polished appearance.

The next operation consists in polishing the assembled rubber parts on a cotton-wheel buff as shown in Figure 5. The side A of this cotton-wheel is coated with rouge, and is slightly dampened, while the other side B is dry and is not covered with any sort of polishing material. The operator holds the pen in both hands, as shown, passing it back and forth over this cotton buff.

After polishing, the pen is tested to see that it does not leak. The assembled pen, without the feed or pen point, is placed in a tank of water, and a syringe, which has a rubber tube that fits tightly in the point section, is inserted in it. Then pen and tube are placed in the water, and the bulb is pressed, forcing air into the pen. If any bubbles are seen to rise in the water it is evident that the pen leaks and must be repaired or discarded.

STAMPING THE NAME ON THE BARREL.

As far as the manufacturing operations are concerned, the holder itself is complete, with the exception of having the name stamped on it. This is accomplished in the device shown in Figure 6. The barrel is placed on an arbor, on which it is clamped, this arbor being connected to a square slide B working against the tension of a spiral spring. The barrel rests between two rolls C and D, the latter roll having the stamp cut in relief, which is to be reproduced on the barrel. The handle E for operat-

ing the rolls is placed in the roll D, the latter being connected to the roll C by a block chain. The groove in the roll C is tapered

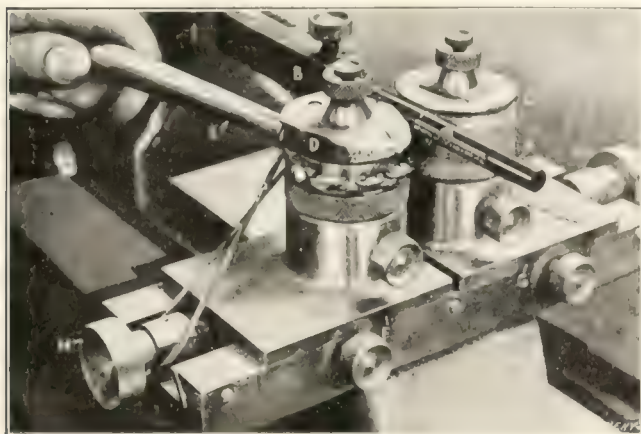


FIG. 6. ROLLING THE NAME IN THE RUBBER BARREL.

slightly to correspond with that on the barrel, and fits snugly. The illustration shows a barrel just after the stamping operation. The rolls are held on sliding bases, F and G, which can be adjusted back and forth by the thumb-screws H and I, so that pen barrels of various diameters can have the name rolled on them in this same fixture.

CHASING THE BARREL AND CAP.

The chasing is an exceedingly interesting process. It is done by a special machine, which is shown in Figure 7, but it is rather a complicated and involved process and could hardly be explained without going into too much detail for a general description like this. In the machine shown in the illustration there are six barrels being chased simultaneously. One feature of the machine that is worthy of particular attention is the fact that this chasing cannot be done by steel cutters, as they do not retain their edge sufficiently long. A steel tool will work for a short time but as soon as it becomes dull it tears the rubber and spoils the work, so the chasing is done by a black diamond similar to those used in truing emery wheels except that they have a very sharp cutting edge. After the chasing is completed the pen is finished and ready for the market, with the exception, of course, of putting in the gold pen, a very necessary but simple detail.

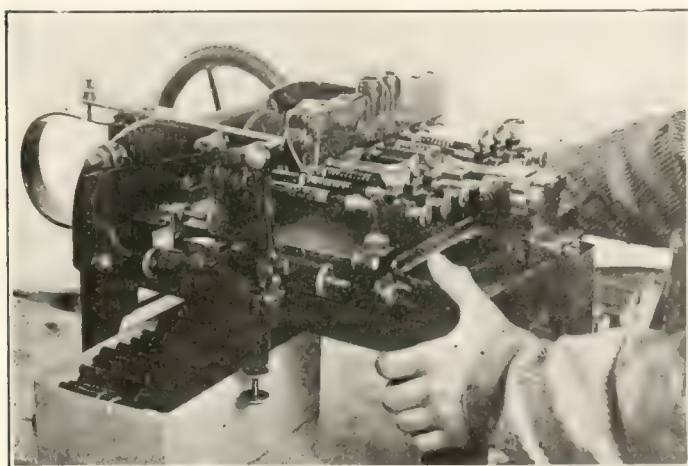


FIG. 7. SPECIAL AUTOMATIC MACHINE FOR CHASING THE RUBBER BARREL AND CAP.

In view of the fact that, properly treated, a fountain pen is almost indestructible, one might imagine, at the rate of the present output, that the market would soon become supplied and the demand diminish. But this is not likely to happen, because the

American market alone is constantly increasing—both by reason of the fact that more people are arriving every year, in one way and another, to increase the population, and by reason of the further fact that more people of those already here are constantly discovering the advantage of a fountain pen—and moreover, in addition to the American market, vast as it is, the whole civilized world has become a market for the fountain pen, for it is an article that doesn't depend for its use upon the season, or the weather, or the climate. It is just as useful at the equator, for a traveling man—to write down a large order for American goods, for instance—as it is for those who sail the northern seas when they want to jot down the daily happenings in the official log. There will always be a demand for it, and an increasing demand, wherever men know how to write.

PRINCIPAL RISKS OF AVIATION.

GERMAN expert opinion is to the effect that the long and successful flights of the Zeppelin airships have proved their capacity to be such that their practical utility will not be affected by the various mishaps they have met with, nor by the risks thus shown to exist. In a discussion of these risks they have been classified as follows by a German expert:

1. **STORMS:** Interpreting the term as meaning winds blowing horizontally, they constitute a lower risk than is generally attributed to them; such conditions being, moreover, usually foreseen. If an airship, nevertheless, gets into a wind it cannot withstand, its situation becomes perilous. Increased security is, however, afforded by the high speed of modern airships.

2. **VERTICAL STORMS:** These storms (one of which proved fatal to the airship "L. 2") form one of the chief dangers of aviation. In very extreme cases they will arrest the power of steering and under all circumstances they cause the airship to ascend much higher than had been intended, thus leading to heavy losses of gas.

3. **TEMPESTS:** Thunder and lightning often accompany vertical storms, but the danger appears to be less than had at first been supposed. It is thought that the skeleton of the airship forms an excellent conductor of electricity.

4. **BURNING:** Unfortunately, hydrogen is the only filling gas at present known and is very inflammable. Combustion takes place with a mixture of 66.5 per cent. of explosive gas. It is therefore necessary to avoid having open fires where they can be reached by the hydrogen. It is at present impossible to provide against explosions, as it is not known to what extent balloon materials generate dangerous frictional electricity, nor what other causes may become operative.

5. **INSUFFICIENT STRENGTH OF THE FRAME:** It has been found that the claims otherwise usual cannot be applied to the frame of an airship. The capacity of resistance increases with the displacement.

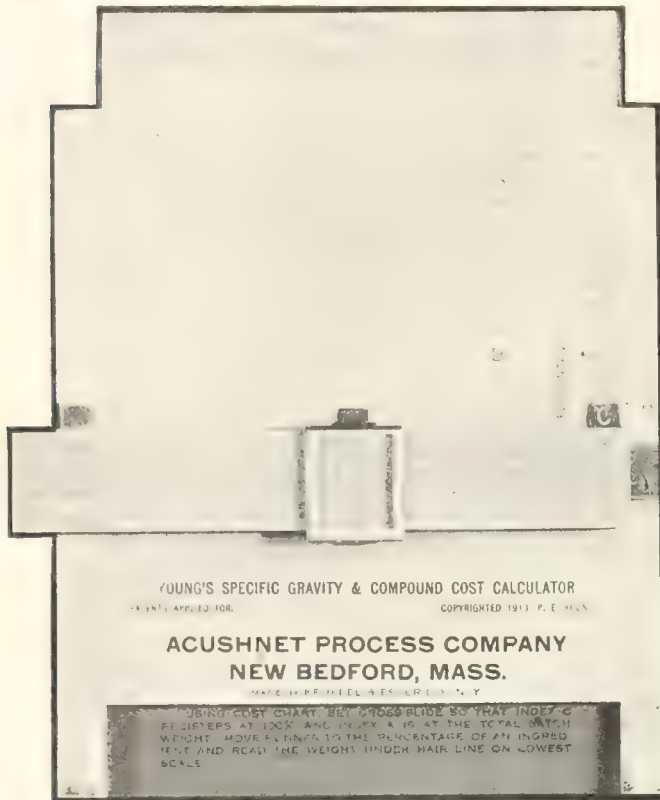
PROSPECTIVE RE-ESTABLISHMENT OF COTTON GROWING IN AUSTRALIA.

The British Cotton Growing Association, in conjunction with the Queensland Department of Agriculture and the Commonwealth Government, has excellent hopes of the re-establishment of a cotton growing industry in Australia. Thirty years ago the East and West Moreton districts had over 14,000 acres under cotton, the cultivation of which has meanwhile dwindled, owing to adverse circumstances. In view, however, of the needs of Lancashire and of the domestic industries of Australasia, the re-establishment of this cultivation is under consideration. The British Cotton Association has undertaken to guarantee a fixed minimum price of 6½d. (13.17c.) per pound for a period of three years. Skilled advice and suitable seed will be supplied to possible cultivators.

A NEW SLIDE RULE FOR RUBBER MEN.

P. E. YOUNG, of the Acushnet Process Co., has devised a calculating machine for the rubber worker which is an adaptation of the slide rule to this particular business.

By looking at the cut it will be seen that there is a kind of slide rule placed over a sliding board with most of the compounding ingredients arranged on this board according to their specific gravity. The spacing is according to the logarithmic scale and the slide rule has a corresponding scale marked specific gravity, which is complementary to the scale on the board.



Each ingredient has a line on the board running to the zero point at bottom. Along the side of the board is a scale running to 100 and the fixed base board has an index mark at *A*.

On sliding out the face board directions for operating the apparatus are disclosed printed on the base board.

HOW TO OPERATE

To obtain the specific gravity of any proposed compound you first place the board in such position that the percentage of rubber is opposite the index *A*. Then move the slide across till the index *C* which is attached to the slide is on the line of the ingredient. Then move runner to left to the stop. Repeat the above operation for each mixing ingredient till the 100 per cent. of ingredients are accounted for and then read the specific gravity indicated under the hair line on the glass face of the runner.

As an example we make a compound of 45 per cent. rubber, 45 per cent. zinc oxide, 5 per cent. magnesium carbonate and 5 per cent. sulphur. By making two settings of the board and four of the slide we read off immediately 1.675 as the specific gravity of the compound. Of course, this is based on the idea that all the ingredients are simple mixtures in the compound and no chemical combination is formed which would have a different specific gravity from the mixture.

Using an ordinary slide rule for this would require that a

setting be made for the percentage and specific gravity of each constituent and a table of specific gravities of each element must be at hand or known. Then each reading must be copied down and some figuring done on paper before the correct gravity is arrived at.

On the rule there is a second scale under the gravities which shows the cubic inches per pound.

The sliding board is reversible and on the other side there is a ruling of percentages. Using this table, it is only necessary to place the slide at cost of first ingredient and move the cross-slide till index *C* is at the percentage, then move runner to the left till it meets the stop. Then place index *A* at cost of next ingredient and repeat till each ingredient is accounted for. The total cost will appear under the cross-hair of the reading glass on the runner.

Another computation which may be made is that of batch weights. In this case, using the cost chart, set the cross-slide so that index registers one hundred and index *A* is at total batch weight, move the runner to the percentage of the ingredient wanted and the weight will appear under the scratch line on the runner at the lowest line on rule marked "Batch Weight."

It would appear that this would prove a time saver for any one whose duty or interest requires the calculations outlined above on rubber compounds.

This article is useful not only to the rubber industry, but to other like industries. For example: If linseed oil is substituted for "rubber," as its specific gravity is .937, which is close to that of rubber, the calculation for the specific gravity of mixed paints may be made. In fact, such an instrument has been used in England for a long time.

The article is made by Keuffel & Esser Co., of New York, and is made in their careful and accurate style.

AMERICAN COTTON INDUSTRY WITHOUT A TRUST.

Mr. C. J. H. Woodbury, Secretary of the National Association of Cotton Manufacturers, is authority for the statement that those capable of giving sound opinions believe that there is an adequate cause for the superior quality of foreign cotton goods and for many of the economies in their production in the concentration of effort in the methods of cotton manufacturing, to which the law in Europe gives full acquiescence.

SKATING ON ROUGH ROADS.

Roller skating is a pastime that is exceedingly popular with young people everywhere, but for its thorough enjoyment it requires smooth walks or pavements. Application has been made for a patent that will enable a person to skate with comfort on rough roads. These skates are in reality a pair of ordinary bicycle wheels, a stiff iron rod being dropped from the hub and skating shoes being attached firmly to the iron rod, the sole of the shoe coming within about 3 inches of the ground. With this arrangement of shoe and firm attachment to the hub the skater is as secure as on the ordinary roller skates, while with the pneumatic tire he can, of course, go over fairly rough ground with perfect comfort. It is a rapid method of ground-covering, but as the weight of the skater naturally falls within the point of contact between the tire and the ground, it requires some practice to use this form of roller skate successfully.

While in this country cotton goods are packed for account of the mill, deliverable at some distant city, in England they are delivered to the customer in the cloth room of the mill. A different packing concern will then send its men to the cloth room, at the expense of the purchaser, packing the merchandise according to the needs of any specified market. One of these concerns has a capital of \$5,000,000, and several of them \$1,000,000 each.

FOREIGN COMMERCE OF THE UNITED STATES.

IMPORTS INTO THE UNITED STATES IN 1913.

IN the form of a neat pamphlet of 48 pages the Department of Commerce has lately issued its annual review of the foreign commerce of the United States for the fiscal year 1913. Both imports and exports were the largest on record, the figures being respectively 1,813 million dollars against 1,654 million in 1912, and 2,466 million against 2,204 million in that year.

Compared with previous years the principal results are as follows:

IMPORTS IN MILLIONS OF DOLLARS.

	Free.	Dutiable.	Total.	Percentage Free.
1880	208	460	668	31.19
1890	266	524	790	33.66
1900	367	483	850	43.21
1910	755	802	1,557	48.51
1913	988	825	1,813	54.47

FEATURES OF 1913 IMPORTS.

The year 1913 showed an increased percentage of goods entering free of duty, being 54.47 per cent., as compared with 31.19 per cent. in 1880, the average ad valorem rate of duty in 1913 having been 40.05 per cent., against 49.24 per cent. in 1900. An analysis of the returns shows for 1913 an aggregate import of manufacturers' raw materials of 635.2 million dollars, forming 35 per cent. of the total, as compared with 276.2 million in 1900, which represented 32.5 per cent. of the whole. Manufactures for further use in manufacturing, showing in 1900 imports of 134.2 million, or 15.8 per cent. of the total, had risen by 1913 to 349.4 million dollars, or 19.3 per cent.

While the fiscal year ending June 30, 1913, showed a proportion of free goods of 54.47 per cent., estimates for the later months of 1913 indicate that the percentage had risen to 61.36 per cent. for October, to 61.72 per cent. for November, and to 63.86 per cent. for December. The effects of the new tariff which went into effect on October 3, 1913, are plainly seen in these results.

RUBBER IMPORTS.

In the order of their present importance, the imports of the ten principal raw materials for use in manufacturing formed in 1913 about 575 million dollars out of a grand total of 635 million. The following condensed table shows in succinct form the history of those industries for practically the last half century, as regards importations of materials to this country for manufacturing purposes:

UNITED STATES IMPORTS—IN MILLIONS OF DOLLARS.

	1870.	1880.	1890.	1900.	1910.	1913.
Hides and skins.....	14.4	30.0	21.9	57.9	112.2	117.4
India rubber and substitutes	3.5	9.6	14.9	33.0	106.9	101.3
Raw silk	3.0	12.0	23.2	44.5	65.4	82.1
Copper ore, pigs, etc....	.2	1.0	.4	15.4	40.2	59.5
Tin in bars, blocks, etc...	2.0	6.2	7.0	19.1	30.9	53.1
Tobacco, leaf	2.5	4.9	17.6	13.3	27.8	35.9
Wool, raw	6.7	23.7	15.3	20.3	51.2	35.6
Cotton, raw	0.3	0.6	1.4	7.9	15.8	23.0
Wood	0.7	2.9	4.3	6.0	15.2	18.0
Fibers (unmanufactured).	6.0	9.4	20.5	26.4	32.4	49.1
Total	39.3	100.3	126.5	243.8	498.0	575.0

India rubber and substitutes thus ranked second in order of value. Of the 101 million dollars' worth of rubber and substitutes imported in 1913, about 90 million was in crude rubber, about half of which came from Europe, and the balance direct from tropical sources.

South American contributions to the imports of the United States include in 1913 in crude rubber: Brazil, 26 million;

Ecuador and Colombia, half a million; Peru, half a million, and Venezuela, half a million, including balata.

FEATURES OF UNITED STATES EXPORT STATISTICS.

While imports have risen since 1880 from 668 million dollars to 1,813 million, the gain in exports during that period has been on a scale of about equal importance—from 836 million to 2,466 million, as shown by annexed table.

UNITED STATES EXPORTS—IN MILLIONS OF DOLLARS.

	Domestic Goods.	Foreign Goods, Re-exported.	Total.
1880	824	12	836
1890	845	13	858
1900	1,371	23	1,394
1910	1,710	35	1,745
1913	2,429	37	2,466

The principal features of the statistics covering these 33 years are the increase in exports of domestic products and the steady decrease in the export of foodstuffs. In 1880 foodstuffs represented 55.77 per cent. of the total exports, and in 1913 only 20.72 per cent., while manufacturers' crude materials rose from 28.98 per cent. in 1880, to 30.13 per cent. in 1913. Manufactures (exclusive of foodstuffs) show, however, an increase from 14.78 per cent. in 1880 to 48.80 per cent. in 1913. The growth shown by manufactures for further use in manufacturing (from 29 million in 1880 to 409 million in 1913) has been more striking both as to total and percentage than has been the case with finished manufactures.

The transition of the United States from an exporter of natural products to one of manufactures has been a steady movement during the last third of a century.

WIDER DISTRIBUTION OF EXPORTS.

The above-named development of export trade has been accompanied by a wider distribution of American products, indicating the growth of direct relations with countries of consumption, as shown in the following table:

DISTRIBUTION OF EXPORTS.

	1880. Per Cent.	1913. Per Cent.
Europe	86.1	60
North America	8.3	25
South America	2.8	5.9
Asia	1.4	4.7
Oceania	0.8	3.2
Africa	0.6	1.2
Total	100	100

EXPORTS OF RUBBER MANUFACTURES.

As shown in detail in the May issue (page 412) exports of rubber manufactures were in the fiscal year 1900-1901, \$3,017,268; in 1904-1905, \$4,780,817, and in 1912-1913, \$12,511,548.

THE SULPHUR OUTPUT OF 1913.

Sulphur to the extent of 311,590 long tons and valued at \$5,479,849 was produced in the United States in 1913, an increase of 8,118 long tons over the production of 1912, with an increased value of \$223,429. This was produced in Louisiana, Texas and Wyoming and was the largest yearly output in the history of the United States, whose production is rapidly gaining on that of Sicily, the leading field for sulphur production in the world, whose output for 1913 amounted to 346,213 long tons. The production of sulphuric acid in the United States in 1913 was 3,538,890 short tons of 50 degree acid, valued at \$22,366,482, an increase of 622,980 short tons over that of 1912.

The Editor's Book Table.

PLANTING IN UGANDA—COFFEE, PARÁ RUBBER, COCOA. BY E. Brown, F.L.S., and H. H. Hunter, LL.D. London, 1913. Longmans, Green & Co. [Cloth, 8vo, 176 pages. Price 10s. 6d. net. Foreign postage, 8d.]

INTO this interesting volume has been condensed all that requires to be known about Uganda and its three chief products: coffee, Pará rubber and cocoa. Uganda, it may be recalled, is a protectorate in British East Africa, in the heart of the continent, bordering on German East Africa on the south and the Belgian Congo on the west. Its southern portion is traversed by the equator and it chiefly lies between 30 and 35 degrees of longitude, east from Greenwich. Uganda has an area of about 117,681 square miles (being somewhat larger than Arizona). The population is estimated to exceed 3 millions.

The authors of this work have had special advantages for its compilation, Mr. Brown having been manager of the Kivuvu (Uganda) Rubber Co., Limited, while Mr. Hunter was director of that and other Uganda companies.

While other parts of the protectorate doubtless possess equal natural advantages, they have not been opened up; planters having been attracted to the Uganda Province (or Buganda), and the Central Province (or Busoga), lying along the northern and

northwestern shores of Lake Victoria Nyanza, on a plateau about four thousand feet above sea level.

The introduction, by Professor Dunstan, C.M.G., of the Imperial Institute, while likewise dealing with the other products



HERRING-BONE TAPPING TO 6 FEET, BOTANIC GARDENS, ENTEBBE.



PARÁ RUBBER TREES 4 YEARS OLD, BOTANIC GARDENS, ENTEBBE.

of Uganda agriculture, emphasizes the practical experience of the authors in the cultivation in Uganda of Pará rubber (*Hevea brasiliensis*); the work being intended as a guide to planters attracted by the natural advantages of the protectorate, as well as by its prospective increased facilities. Unqualified success has so far attended the introduction of the *Hevea*; the trees having furnished a satisfactory yield of rubber of good quality; it being predicted that *Hevea Brasiliensis* will supersede *Funtumia elastica*, becoming the chief, if not the only variety of rubber exported from Uganda.

In the text of the volume data are given as to the history of rubber cultivation in Uganda, from which it appears that it was first introduced through a single tree, received from Kew in 1901, which by 1904 had attained the height of 21 feet. Early in 1904 one thousand seeds were imported from Ceylon, from which about 300 plants were obtained; the latter being planted out in the gardens at Entebbe, and affording in 1911 a basis for conclusions as to growth and yield. Trees from seeds planted early in 1904 had attained by 1909 a height of 33 feet, with a girth of 15½ feet. These figures are considered to show that the tappable size of 16 inches girth 3 feet from the ground, is reached in Uganda in five years. The average girth of the whole field in 1912 was 22½ inches. The accompanying illustration shows the growth of Pará rubber at 4 years at the Entebbe gardens.

The details of cultivation are dealt with, covering the choice of land for plantations, cleaning and planting, weeds, weeding and upkeep.

The collection and preparation of Pará rubber and other products are then taken up, with special reference to tapping; details are likewise given regarding the erection and arrangement of



PARA RUBBER TREES 4 YEARS OLD, KIVUVU.

factory buildings, as well as curing and drying appliances.

The yield obtained at Entebbe from 164 trees tapped 41 times over a period of three months in 1912, was 13 ounces of dry rubber per tree from trees presumably 8 years old. A series of interesting chapters covers the subject of estate management and costs, while the section of diseases is dealt with comprehensively by Mr. G. Massee, F.L.S.

This work is a valuable contribution to rubber literature, particularly as regards Central Africa.

As showing the manner in which coffee is interplanted with rubber, the illustration here reproduced, of coffee in flower between Para rubber trees at Kivuvu, will be found of interest. The text is amplified by about 40 illustrations and two well executed maps.

ANNUAIRE UNIVERSEL DU CAOUTCHOUC et de la Gutta Percha. Paris, 1913. Le Caoutchouc et la Gutta Percha. [Svo., paper, 212 pages.]

THIS handy little volume has appeared in its accustomed form and contains a classified index of the rubber trade in all

countries. Its divisions are in the first place into articles and in the second into countries, under which the various names are alphabetically arranged. A large number of recipes for compounds are included in the contents.

STATISTICS OF A FEW RUBBER COMPANIES. COMPILED BY THE MORISON RUBBER COMPANY, LTD., (LONDON AND KIVUVU.)

WHAT is the prospective dividend on an investment in rubber shares, is a question which naturally suggests itself to the intending investor. Prices of the raw material being subject to fluctuations, such changes must necessarily be provided for in any attempt to forecast results.

This need has been met in the handy calculations of Mr. Morison, showing the profits to be anticipated from the sale of rubber at respectively 1s. 8d. (40.54 cents), 2s. (48.65 cents) and 3s. (72.98 cents) per pound. The two other factors to be taken into account are the production and the rate to be credited to capital, necessarily varying in each case.

The idea is to furnish investors with a pocket guide to the value of rubber shares, and this has been accomplished in the booklet—13 x 3 inches in size—compiled by Mr. Morison.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE DISTRICT OF KIVUVU. (KIVUVU, 1913, 32 pages.)

IN this comprehensive volume, the subject of education is first treated under the various heads of Kindergarten progress, rural, agricultural and commercial training. The question of industrial and vocational education is then taken up, with special reference to the recent Grand Rapids Convention of the National Society for the Promotion of Industrial Education. This society is conducting, personally and by correspondence, a propaganda of far-reaching influence, acting in harmony with the various Chambers of Commerce.

Not only with conditions in the United States does this valuable report deal, but special sections are devoted to Mexico, Central America, Panama and South America. Crossing the ocean, the reader is taken to Great Britain, Scandinavia and the other countries of Europe, Asia and Africa. Finally, events of international interest are briefly reviewed, including approaching expositions in America and Europe.

The Chemistry of Rubber, by B. D. Porritt, B.Sc., published by Gurney & Jackson, of London, was reviewed in considerable detail in the March number of THE INDIA RUBBER WORLD. The D. Van Nostrand Co., of 25 Park Place, New York, is the American agent for this book, the price of which is 75 cents.



COFFEE IN FLOWER, BETWEEN PARA RUBBER TREES, KIVUVU.

NEW TRADE PUBLICATIONS.

THE Portage Rubber Co., of Akron, Ohio, has recently issued a small catalog, pocket size, of its rubber accessories, for automobiles. This describes and illustrates hook-on tire boots, lace-on tire boots, blow-out patches, inside tire plasters, and the tread gum, cement and other repair materials manufactured by the company. A page is devoted to a list of the company's distributing points, which are well scattered over the country, reaching from New York to various points in Texas and California.

"Unbiased Information" is the title of a ten-page folder just issued by the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, for distribution to tire users. Its aim is to suggest some things that will pave the way for satisfactory adjustments between the user and tire manufacturer. It suggests, in the first place, the advisability of buying a good tire, paying enough to get a good tire and taking care of it; then, if for any reason the tire fails to give the service it should and you go back for adjustment, state the facts. These sensible suggestions are followed by three pages of instructions in the care of tires, which included numerous "Don'ts" and a few "Dos." Two pages are devoted to illustration and description of the Lee Puncture-proof tire, which the company guarantees to give 3,500 miles of service without puncture, standing ready in case of its failure to give this service to refund the amount paid for such a tire in excess of the price of the regular Lee tire of the same size, and also to repair the puncture free of charge.

The latest catalog of the Racine Rubber Co., of Racine, Wisconsin, contains in its 29 pages a full description of the company's product. Commencing with a photograph of the factory and the story of its organization, equipment, etc., it first calls attention to the tire product, for which the company has adopted the slogan, "Every Tire a Good Tire." Three styles of casings are made by this company—Clincher, Quick Detachable Clincher and Straight Side—and numerous treads, in sizes to fit all rims. Tables of inflation and size of tire for different weight cars are given, also a list of the company's distributing agencies, of which there are 37 in the United States, scattered through 15 states. Five pages are devoted to accessories, which include all the usual repair requirements, and one page to guarantee.

There are eighteen bulletins in the series issued by the publicity department of the Goodyear Tire & Rubber Co., of Akron, in its campaign in the interest of tire conservation. Bulletin No. 1 is devoted to instructions on the care of tires, the other seventeen being descriptive of the various causes which result in damage and ruin, with illustrations of treads and tubes so destroyed. Twelve of the bulletins relate to casings. They tell the story of neglected cuts, fabric breaks and mud boils; of scraped treads, due to sudden stops, quick starts and skidding; of worn treads, chafed sides and ruin by car tracks, by chains, by oil, by snags, by unsuitable storage and rim cuts. The remaining five bulletins cover pretty thoroughly the accidents that may occur to inner tubes, as under-inflation, stretched tube—due to lack of talc, ruin by rusted rims and by carrying uncovered.

Under the title of "Rules of the Road and Saving Hints to 'The Man Behind the Wheel'" the B. F. Goodrich Co., of Akron, has issued a book $3\frac{1}{2} \times 6$ inches in size and containing 48 pages of valuable information. Chapter 1 of this volume gives the rules of the road governing street traffic—passing, turning, stopping, standing and starting—and later chapters give similar regulations regarding signals, right of way, speed, respective rights of drivers and pedestrians and the duty of each, lights, etc. It contains an interesting chapter on accidents, while pages 19 to 38, inclusive, cover the care and repair of tires. It gives a list of the route books obtainable without charge from

the Goodrich touring bureau, also a short story of the growth of the company and a list of its wholesale stock depots, and of dealers handling its products in the United States and abroad.

The June calendar in the monthly series being sent out by W. G. Brown & Co., dealers in crude and reclaimed rubber, of Cincinnati, Ohio, is not only most attractive but especially appropriate to the vacation season. It pictures a fishing scene, where the vacationist is having an interesting and exciting time endeavoring to land a particularly game muskellunge, which, though hooked, strenuously objects to being taken in; while the guide is an intent spectator of the unequal struggle.

Mr. Arthur Dyer, broker, of the Produce Exchange, New York, gets back to original principles. The name rubber, it will be recalled, was derived from the fact that the first use in a civilized country of the product of the *Hevea* tree was for the erasure of pencil marks. As it rubbed out the mark it was called "rubber." Mr. Dyer has sent some of his friends and customers a little block of red rubber intended for erasing purposes. On one side it is marked with his name and address, and on the other with the products in which he deals.

A REAL RUBBER ANNOUNCEMENT.

It will be recalled that one of Mr. Goodyear's early exploits was the publication of the story of his success in rubber manufacture in a book made entirely of rubber. The Dryden Rubber Co., of Chicago, Illinois, has followed Mr. Goodyear's plan. It has recently sent an announcement to the trade in the form of a rubber sole 6 inches long, on which is inscribed in raised letters the following: "We announce for the coming season our superior line of rubber soles and heels, which thoroughly merit your consideration."

If the company were to get these announcement soles out in rights and lefts, mothers of young children would be around gathering them up so that they could equip their offspring with non-skid rubber soles with no expense except a few drops of cement.

THE FIRESTONE "TOP O' THE WORLD" BANNER.

The Firestone Tire & Rubber Co., of Akron, Ohio, has distributed copies of a showy lithographed banner to some 35,000 dealers. The banner is about 20 x 40 inches, printed in eight or ten colors—orange, yellow and blue predominating—and shows one of their non-skid tires traveling over the surface of the earth and leaving a non-skid impress—apparently about a thousand miles wide—across the continent of North America. It is a striking advertisement.

LA REVISTA DEL ATENEO HISPANO AMERICANO (REVIEW OF THE SPANISH AMERICAN ATHENEUM).

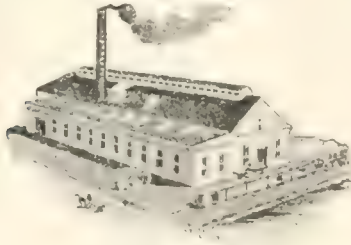
In the first number of this review—published in Washington—a variety of interesting articles deal with questions of historical, literary and political interest. The issue opens with a paper by Hon. Francisco Javier Yanes, president of the Atheneum, well known as the Assistant Director of the Pan-American Union. Since the creation of the Atheneum, somewhat more than a year ago, it has reached an active membership exceeding two hundred and fifty. The review has a twofold object. On the one hand, it aims to keep alive interest in the study of Spanish; while on the other, it is intended to form a link between the United States and the former Spanish colonies in America and the Pacific.

Other features include papers by the Spanish Ambassador; Hon. Robert Bacon; Right Rev. Dr. Charles Currier, Bishop of Matanzas; Professor Patrick J. Lennox; H. W. Van Dyke, and others.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THIRTY YEARS OF SUCCESS.

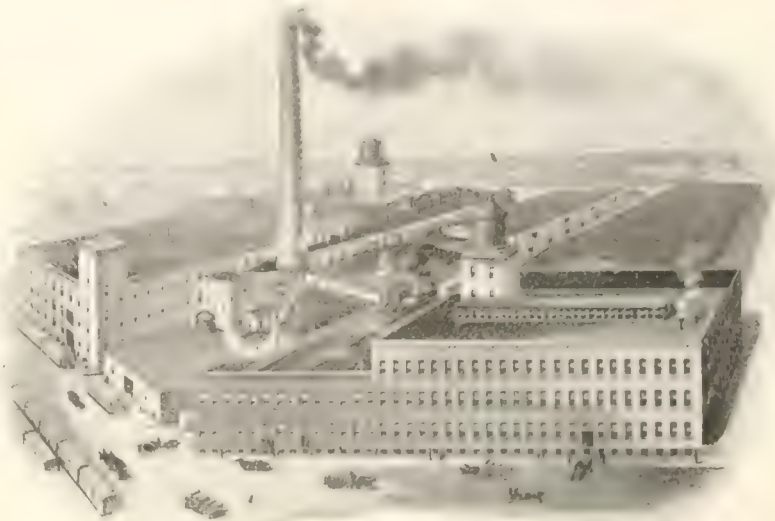
PROBABLY a good many well informed men in the rubber trade would have said that the rubber reclaiming business in this country did not date back more than 15 or 20 years, but they would discover their error were they to look over the handsome little book entitled "Thirty Years of Success," recently issued by the United States Rubber Reclaiming Co., whose executive offices are in New York, but whose plant is in Buffalo. This company has been in existence thirty years, and among



ORIGINAL PLANT

the very interesting illustrations in its handsome booklet are two factory reproductions, one showing its original factory with a capacity of $1\frac{1}{2}$ tons per day and employing 15 workmen, and the other showing its present plant covering an area of $4\frac{1}{4}$ acres, employing 600 workmen and having a daily capacity of 64 tons. There is a good deal of interesting information in this

book about the reclaiming industry, as, for instance, the statement that last year's consumption of reclaimed rubber amounted to 160,000 tons—which is about 60,000 tons in excess of the production of new rubber for the year.



PRESENT PLANT

The book consists of 16 large pages and a handsome embossed cover, and contains a number of halftone cuts showing various phases of the company's work.



LABORATORY

Completely equipped for quick and thorough experimental tests, both chemical and physical.



PILE OF TIRES IN YARD

Showing part of a stock of 5,000 tons of old auto tires at a time, stock from nearly 100,000 cars.



STOREROOM FOR SCRAP TIRES

When the tires are taken from the cars they have had all the steel and wire removed.



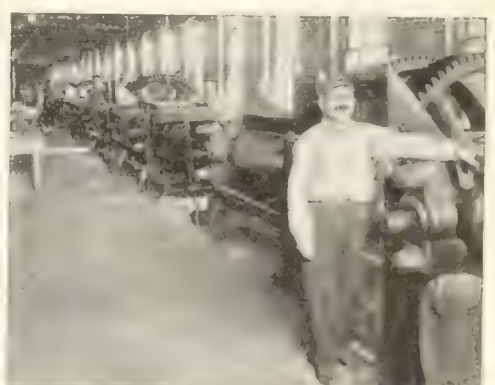
DEVULCANIZERS

Showing three of these great retorts, each with a capacity of 40,000 pounds.



DRYING ROOM FOR TIRE STOCK.

Showing the material practically finished, except that it must be retorted and sheeted.



MILL ROOM

Where the material is run through rollers and sheeted.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

REPORTS are still somewhat at variance regarding the state of business, but I find that there is a decidedly more hopeful feeling all along the line. For instance, the automobile business, as is the rule with trades devoted to luxuries, hasn't been up to the average this year, and the argument is that more old cars are in use and these old cars require more frequent renewals of tires, therefore the tire business gets the benefit. A trip along Boylston street and out Brookline way finds most of the Boston managers of tire stores quite enthusiastic over present and prospective trade.

* * *

Take the rubber sole business. The leather situation has been such that shoe manufacturers were glad of the growing fad of using rubber instead of sole-leather. Therefore every—or nearly every—manufacturer whose equipment would enable him to turn out rubber soles is doing a good business. There are all qualities of these goods, and shoe men can buy soles at most any price, with too many poor, cheap soles in the market, which, because of their poor service, will fail to give satisfaction; and if this state of affairs becomes too prevalent, good-bye to the rubber sole shoe fad. Only good soles should be used, but there's always a demand for cheapness. Then, there's the raincoat trade. A man whose father was a pioneer in the rubber clothing business, and who succeeded him, states that the change in the tariff has made serious inroads in the raincoat business. English and German manufacturers can now compete with American makers, and consumers, all other things being equal, are likely to prefer coats of European make if they can be had at about the same price as the domestic product. This makes business poor in all except the cheaper grades. However, another manufacturer of fine quality raincoats reports a good demand for his standard lines, which are among the most expensive made in this country.

* * *

When it comes to mechanicals, there is the same disposition on the part of mills and power plants not to stock up with emergency supplies of beltings and packings but to rely on local houses or on quick express service. It is about the same with fire hose. But in garden hose there was a good demand in advance of the retail season, and this is being continued by supplementary orders from many sections where the rain-fall is below normal.

Those factories which make fruit-jar rings report plenty of orders despite the good business which they did some months ago. Indeed, one factory keeps a force of workers busy almost the entire year in this department.

* * *

The Alden Rubber Co. was incorporated last month with a capital stock of \$100,000, of which \$50,000 is preferred stock and the remainder common stock. This company succeeds the Hoyt Rubber Co., and will continue the business of that concern at 58 Thayer street. At its head, as president, is G. Edwin Alden, who is known to the entire rubber trade. C. W. Hoyt, the secretary of the new corporation, has been owner and manager of the Hoyt Rubber Co. for the past twelve years. The secretary is B. E. Phillips, who was also connected with the Hoyt company. The Alden Rubber Co. is already manufacturing a large line of molded rubber goods, and among its specialties will be soles and heels, sponges, tubing, etc., besides which it will carry on a department devoted to experimental work.

Mr. G. Edwin Alden continues to represent, as its New England agent, the Standard Asphalt & Rubber Co., of Chicago and New York, proprietors of M. R. X., the celebrated compounding ingredient so extensively used in the rubber industry, and still retains his office at 10 High street, where he established this

agency several months ago. The merits of this substance are certainly appreciated by rubber manufacturers in New England, if one may judge by its steadily increased demand.

* * *

As already stated, the manufacture of substitutes for leather increases with the high cost of the latter article and the boom in popularity of rubber soled footwear. A new competitor in the leather-rubber sole business is the Vulcan Fibre Co., organized recently, with a factory in Andover, Massachusetts, and a sales-room and office in the heart of Boston's shoe district. This company has for its president, Everett B. Cook, of Danvers, and the other directors are E. W. McCarthy, a prominent resident of Peabody, and A. W. Baker, a shoe manufacturer of Georgetown. The company takes sole leather remnants, which are shredded, mixed with rubber, gum and vulcanizing materials and rolled out to proper thickness. After vulcanization, soles are dried out, constituting the principal product of the company.

These soles are claimed to wear longer than either leather or rubber soles, are non-slipable, damp-proof, will not crack either in wear or in the sewing on by machine; and the company shows important economies to the manufacturer over leather or rubber soles. Already a good business is reported by the company.

* * *

I understand that there will be a change in the management of the Danversport Rubber Co. at the annual business meeting in July. This company, which was organized in 1893, has been an important reclaimer of rubber. The principal owner, W. J. Corbett, died in September, 1909, and the business has since been managed by J. C. Walton, the original Clerk of the company. During the years of his administration he has steadily improved the plant, adding to the business of the company and increasing its profits. Mr. Walton will, however, retire from the management of the company, but is not yet ready to give out any information as to his future plans.

Robert C. Harlow, president of the Monatiquot Rubber Co., is at present writing on a fishing trip at the Rangeley Lakes.

THE RUBBER TRADE IN AKRON.

By our Regular Correspondent

THE Miller Rubber Co. plant is to be materially enlarged by the erection of a warehouse and other buildings. Plans for the extension are being worked on now.

The announcement of the additions was made Saturday morning by the company, and at the same time it was announced that the ground formerly owned by the Franz Body Works, an auto body manufacturing concern, immediately across from the Miller company, has been purchased. Modern factory buildings will be erected on this ground after old structures covering about half a block are removed. No estimate of what the extensions will cost can be made yet, say the officials, as the plans are not prepared.

* * *

The Williams Foundry & Machine Co., under its profit-sharing plan—now in its third year—recently distributed among 125 employees—superintendents, foremen and workmen—seventeen hundred dollars, as follows: To workmen, a thousand dollars, according to length of service, and five hundred dollars according to number of hours worked; two hundred dollars to superintendents and foremen.

The B. F. Goodrich Co., at the meeting of the National Association of Engineers of Ohio, made a special exhibit of the Graham-White King hose, which is used for high pressure in fire protection. This is meeting with a great demand, and is becoming one of the leading hose makers of the Goodrich company.

Operations at the factory of the B. F. Goodrich Co. are now at a maximum, as is always the case during the automobiling season, when most cars are in use. At the present rate of production—10,000 tires a day—continued for a year, the output would exceed the aim of the company, which is 2,000,000 tires a year, but this rate of course will not be kept up. The entire mechanical department is also running at full capacity, and the daily production is said to include about 17 miles of rubber hose and 7 miles of belting.

The White Anchor Relief Association of the B. F. Goodrich Co. will probably be united with the Diamond Relief Association, which is connected with the Diamond branch of the Goodrich plant.

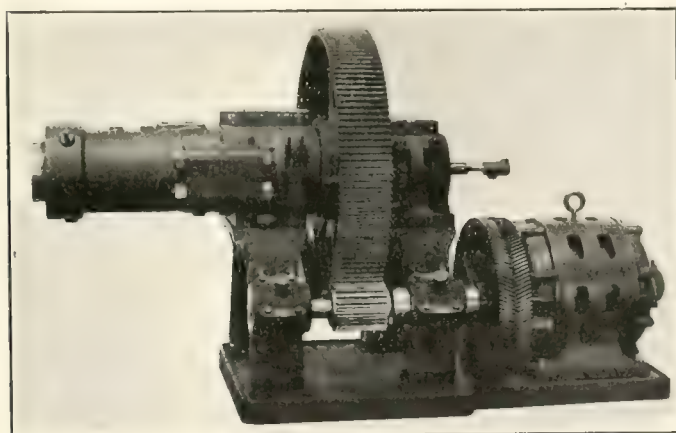
* * *

The Goodyear Tire & Rubber Co. is making continuous experiments with various balloon fabrics. This company has installed a new large press in its belting department. The capacity of this department is about twenty thousand feet per day. The demand for balata belting is heavy.

A motorcycle trip around the globe, having as its purpose the furthering of the interests of the negro race, has been planned by J. H. Cooper, of Akron. This trip will include London, Paris, Berlin, Rome, Cairo, Africa, South America and Australia, and every part of the outfit required has been selected with extreme care. Goodyear tires and tubes form a part of the equipment.

* * *

The machine here illustrated is the Adamson straining or refining machine. It is designed with special drive in order to bring the machine as closely to the floor as possible, and avoids the necessity of a pit; and being motor driven a self-contained unit may be placed at any convenient location without special



ADAMSON'S STRAINING OR REFINING MACHINE

foundations. These machines, which are built in a variety of sizes, and equipped with the most approved and substantial bearings, have come to be standard among rubber reclaimers. The Adamson Machine Co., engineers, designers and builders, are the manufacturers.

* * *

Students taking the factory co-operative engineering course in the University of Akron instead of getting a summer vacation are to commence work July 1 in the rubber and other factories of the city. They will spend two weeks alternately in the factory and class-room, and are to receive pay for their work.

* * *

The Quality Tire & Rubber Co., capitalized at \$150,000, organized under the Ohio laws for manufacturing automobile tires and tubes, is equipping a new plant at Hartville, Ohio, located on the Wheeling & Lake Erie Railroad, about twelve miles north of Canton. The officers of the company are: F. A. Schumacher,

Hartville, Ohio, president; C. F. Munk, Louisville, Ohio, vice-president; E. D. Smith, Akron, secretary and treasurer; E. E. Smith, Akron, general manager; E. H. Trump, Akron, general superintendent.

* * *

The Star Rubber Co. has recently increased its capitalization from \$250,000 to \$350,000.

* * *

The National Association of Stationary Engineers held its state convention in Akron, June 17, 18 and 19. Various papers were read and discussed. The delegates made an inspection of Goodrich and Goodyear plants, and the N. O. T. Gorge power house and dam. Various rubber companies exhibited a full line of mechanical goods. The following were among the exhibitors: H. W. Johns-Manville Co., Home Rubber Co., The B. F. Goodrich Co. and Goodyear Tire & Rubber Co.

* * *

The Portage Rubber Co. is increasing greatly its line of mechanical goods, and also adding a large number of employees.

Mr. F. E. Holcomb, manager of the Kelly-Springfield plant in Akron, is confined to his home with inflammatory rheumatism.

This company expects to occupy its Akron office some time in July.

Mr. Anthon Berg, expert on balata belting and asbestos packing, left for his home in Norway on June 30.

* * *

In a fire that destroyed the Government Powder House at Panama City on the night of June 5 the automobile of the fire chief of that city, which had been left standing about 150 feet from the powder house, was completely destroyed, one of the front wheels being blown free from the car. This was later found more than 100 feet distant, and, to the amazement of everyone, the tire—a Firestone Non-Skid—was absolutely uninjured. Mr. Arosemena, the fire chief, is said to have expressed himself as quite satisfied with this test.

THE GROWING POPULARITY OF TIRE HOSPITALS.

By Our Cincinnati Correspondent.

THE "tire hospitals" which are growing very rapidly in number—at least through the Middle West—have given a great impetus to the high grade tire trade. Formerly many auto owners were disposed to adhere to the cheaper grade of tires, on the



THE INNER TUBE NEEDS REPAIRS.

theory that it didn't make very much difference what the tire cost it was bound to get stone-bruised and the more expensive

the tire the greater the loss. If they wanted to have the tire repaired they had to resort to the country blacksmith, who tinkered up autos. as a sort of side line and graded his charges for this sort of work by the tourist's general appearance of financial prosperity.

But now the tire hospitals have taken over all this sort of work and do it on a regular schedule of prices, so that the autoist



REPAIRING THE TIRE

has learned just what he ought to pay for a certain repair; and the prices being reasonable and fairly standard, he has been encouraged to invest in better tires than was formerly the case, knowing that it is worth while having them repaired in case of accident.

All sorts of tires come in to these hospitals, from the very cheap to the most expensive. The proprietors of these repair shops say that as between non-skid and plain tires they find the non-skid variety gives a little more service, as a rule, but not a great deal more service, many of the plain tires, if properly cared for, being good for 3,500 miles, and even more. The prime source of trouble is the stone bruise, which results in a blow-out. For this sort of repair the Middle West hospitals charge from \$3 to \$5.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE Luzerne Rubber Co., whose main offices and works are located in this city, is increasing its plant by the erection of another factory building in addition to the one mentioned in the May number of THE INDIA RUBBER WORLD. Both of these extensions are 40 x 80 feet in area and two stories high, one being of brick and steel and the other of concrete and steel. The Luzerne company's production is confined entirely to hard rubber specialties—sheeting, rod, tubing, molded goods, battery jars, etc.—and the additions now in progress will enable the company to increase its output by about fifty per cent.

* * *

The A. C. Squires Rubber Co. has been incorporated under the laws of this state with a capital stock of \$150,000, to manufacture a line of tire inner tubes, liners and other repair goods, as well as dress shields, dental rubbers, bathing caps and calendered fabrics. The officers are: William F. Woodill, president; Edward A. Bohn, vice-president; Charles F. Bohn, secretary, and Arthur C. Squires, treasurer and general manager. Mr. Squires of this company is authority for the statement that the new plant will be equipped with new rubber working

machinery. The office is at Keyport, where, I understand, it is also proposed to establish the factory.

* * *

The Buckeye Rubber Co. has withdrawn its charter from this state.

* * *

Preparations are being made for a safe and sane Fourth of July celebration in Trenton this year which will surpass that of a year ago. General C. Edward Murray, of the Empire Rubber Co., has shown great interest in these celebrations, contributing financially to their success beside donating most of the necessary apparatus. General Murray was recently nominated a director of the Philadelphia Reserve Bank.

* * *

Frank W. Thropp, secretary of the John E. Thropp's Sons Co., manufacturers of rubber mill machinery, has recently returned from a two months' tour of Europe. Mr. Thropp is a member of the Board of the Gethsemane Baptist Church of this city, and a delegation from that church, which included the pastor, the Reverend Cuthbert P. Newton, met him upon his arrival at the pier in New York. The Men's League of the church also tendered him a reception, held in the church parlors, which had been decorated for the occasion. This celebration was attended by about eighty of Mr. Thropp's friends and included, beside addresses of welcome, an excellent musical program.

* * *

August W. Busch, for more than twenty-five years an employee of the John A. Roebling Sons' Co., of this city, died June 2, at his home in Chambersburg. He was fifty-seven years old and is survived by his wife and three daughters.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

FOR the most part the local rubber trade in all branches has been satisfactory during the past month, though there seems to be a hand to mouth tendency on the part of buyers, caused by the generally uncertain business situation.

Most of the repair work has been done in the grain elevators, and they are now waiting to receive what promises to be one of the most abundant harvests in many years. More than the usual amount of rubber belting was sold to these concerns during the year by local rubber companies, but most of the shipments have been made, and salesmen are already working for next year's business.

* * *

Never before was there so much building in Chicago as at the present time. Dozens of new skyscrapers are being erected in the loop district, and this means contracts for various forms of rubber goods. The fire protection requirements in this city include a single pipe running from the cellar to the roof of the building, to which a rubber hose of certain length, with a nozzle, is attached on each floor, for instant use in case of fire. The custom is to let the contract for the required hose to some local mechanical rubber firm. In addition, many of the big new buildings use rubber tile, which is supplied in many attractive designs and colors by local rubber firms.

* * *

One of the most disastrous strikes which ever disturbed the rubber business in this city was that of the brickmakers, which has just been concluded. While only about 2,000 brickmakers were themselves out on strike, the brick famine resulted in the enforced idleness of more than 150,000 men and completely tied up a dozen different occupations. In the end a settlement was reached, the strikers returning to work at only a few dollars a year advance over their previous scale of wages.

* * *

In banking circles the feature of the month was the failure of the La Salle Street Trust and Savings Bank and five sub-

subsidiary banks located in various parts of the city. The result of this failure has been to make money tight in banking circles, owing to the loss of confidence on the part of depositors. Loans are hard to secure unless the best of collateral is produced, and there has been a noticeable slowing down in financial operations of all sorts.

Four hundred advocates of good roads, including a number of tire men, met last week at the Hotel La Salle to attend the annual convention and dinner of the Illinois Highway Improvement Association. Governor Dunne was present and talked on the good roads question. He outlined the principles in the Tice law, under which more than \$2,000,000 will be spent in this state for good roads during the coming year, also outlining the law under which state convicts work, on the "honor" system at Camp Hope, near Dixon, Illinois.

* * *

The Fiberoid Rubber Co., has completed some new designs in stair treads, matings and perforated mats which look like winners. The factory has been remodeled for the summer, the offices newly decorated and in the work room several new machines have been installed.

* * *

Many of the local rubber men are either taking their vacations at the present time or are planning on vacations soon to be taken. Most of them go to one of the northern lakes for a few weeks' fishing and hunting. Plans are being made for a picnic to be held at some resort near the city. Every rubber man who owns an automobile will take as many other rubber men as he can carry. The procession will leave the city Saturday noon and will remain at the resort until late Sunday evening, when the return trip will be made by the light of the moon—or without the light of the moon if that orb is obscured. While no definite date has been set, the picnic will take place in the near future. There being no local association of rubber men, it is believed that frequent outings of this kind held during the summer will do much to promote friendly trade feeling, which in this city is somewhat lacking, many of the rubber men not having personal acquaintance with their competitors.

* * *

William Redfield Perrin, president of William R. Perrin & Co., of Chicago, manufacturers of Vulcanizing presses and other special rubber mill machinery, died on June 2, after a short illness.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent

THERE is but a slight difference in the rubber business in this vicinity at the present time, as a whole, as compared with a month ago. Some manufacturers report increasing orders while others acknowledge a slight falling off. The former are largely concerns that make tires and similar goods, while the latter are manufacturers of footwear—with the possible exception of tennis shoes. The recent fire at the plant of the Bourn Rubber Co. in this city the last of May, threw a number of employes out of work. Arrangements are being perfected for a resumption at an early date.

At the present time there is a shut-down at the Alice rubber shoe mill of the Woonsocket Rubber Co. at Woonsocket, affecting about 1,500 hands, and at the Millville rubber boot mill of the same concern at Millville, where about 800 hands are employed. The notices posted early in the month at the Alice mill read as follows: "Vacation shut-down. Last day's making, Saturday, June 20. The date of starting will be posted later and advertised in the papers. During the shut-down it is planned to install five large magnetic safety clutches and make extensive alterations in the power plants, which

will probably necessitate a shut-down of four weeks. Work will be rushed with all possible despatch, and should it require another week or so, due notice will be given."

* * *

The State tax upon corporations was certified to the General Treasurer on June 12 by the Rhode Island Board of Tax Commissioners and shows a considerable decrease from the assessment of a year ago, caused, it is stated, by general business conditions. The tax is payable July 1 and if not paid before July 15 is subject to an interest charge.

* * *

The Brown & Sharpe Manufacturing Co. remains the heaviest taxpayer among corporations taxed upon corporate excess, although the amount was reduced from \$10,496,017.18 to \$9,886,560. The National India Rubber Co., of Bristol, is taxed this year for \$1,309,453.18, while a year ago it was \$1,845,566.67. This is a decrease of \$536,113.79. The Revere Rubber Co. of this city also shows a drop amounting to \$336,450.75 in its excess. Last year its excess was \$851,627.42, while this year it is but \$515,176.67.

* * *

Among the list of manufacturing, mercantile and miscellaneous corporations associated with the rubber industries having a corporate excess of \$50,000 or more are the following: American Electrical Co., \$859,619.16; American Multiple Fabric Co., \$72,854.20; American Wringer Co., \$1,109,940.90; Atlantic Tubing Co., \$116,285; Joseph Banigan Rubber Co., \$1,338,900; Bourn Rubber Co., \$83,300; Brown & Sharpe Manufacturing Co., \$9,866,560; Collyer Insulated Wire Co., \$82,580; Davol Rubber Co., \$131,688.83; Glendale Elastic Fabric Co., \$142,337.57; Mechanical Fabric Co., \$613,243.32; National India Rubber Co., \$1,309,453.18; New England Butt Co., \$183,580; New England Supply Co., \$57,621.32; Nicholson File Co., \$2,663,340.71; Phillips Insulated Wire Co., \$1,437,561.29; Revere Rubber Co., \$515,176.67; Standard Mill Supply Co., \$53,072.72; Tubular Woven Fabric Co., \$53,248.58; United States Mill Supply Co., \$74,447.81; United Wire & Supply Co., \$506,380; Washburn Wire Co., \$762,061.91, and Woonsocket Rubber Co., \$983,492.73.

* * *

Howard R. Gray, a graduate from the commercial department of the Colt High School at Bristol, has accepted a clerical position in the office of the National India Rubber Co. in that town.

At the factory of the National company, Assistant Superintendent James W. Franklin has been hiring makers, stitchers and learners for the tennis department. The shoe department is working full time and additional help is being put on. The wire department, however, has slackened so that it is only operating on a three-quarter time schedule.

Many friends of Mr. and Mrs. LeBaron C. Colt assembled at the Colt home on Smith street, Bristol, on Wednesday evening, June 10, to congratulate them upon the tenth anniversary of their marriage. There was a reception from 5 to 7 o'clock and Mr. and Mrs. Colt were the recipients of many handsome presents. Mrs. Colt was assisted at the reception by her children, Miss Jou Jou Colt and Masters Carlton and George A. C. Colt. A dinner was served and music was furnished during the evening. Guests were present from Bristol, Providence and Newport.

* * *

Terrence McCarthy, manager of the Consumers' Rubber Co., of Bristol, has invented an important improvement to the buckles used in the manufacture of rubber goods, particularly arctics, and with William N. Dunton has recently been granted a patent on the invention. The introduction of this new buckle will be of more than usual interest to rubber manufacturers, for this invention, which has to do with the

clasp is a radical departure from previous designs. The new buckles can be used on clothing with equal advantage.

At a recent meeting of the stockholders of the Revere Rubber Co., held at the offices of the corporation in this city, it was voted to increase the capital stock from \$4,000,000 to \$5,000,000, and notice to that effect has been filed at the office of the Secretary of State for Rhode Island. This notification is signed by Elisha H. Williams, president, and W. H. Gleason, secretary. Under the new capitalization the corporation will have \$3,000,000 preferred and \$2,000,000 common stock, the increased capital being in the former, which previous to the vote of the stockholders was only \$2,000,000. The new issue will therefore be \$1,000,000 preferred.

Three tire manufacturers from Hanover, Germany, in this country on a general inspection tour of tire plants, recently visited the factory of the Revere Rubber Co. in this city, and made a complete inspection of the plant. They were the guests of General Manager Harlow Waite.

Col. Samuel P. Colt, of Bristol, president of the United States Rubber Co., left on Memorial Day for his annual June trip to Camp Colt, at the foot of Mount Katahdin in Maine, accompanied as usual by several guests. In the party were Mr. and Mrs. Edwin A. Barrows, Rev. George L. Locke, D.D., of Bristol; Dr. Calvin S. May, Miss Frances Winaus, Miss Samuels and Nathaniel Myers, of New York; Miss Ruth Anthony, of Boston; Miss Beatrice Colt, Mrs. William Beresford, Walter S. Ballou and Col. and Mrs. Harold J. Gross, of this city.

* * *

H. F. Bittaker & Co., 52 Aborn street, Providence, have recently taken the local agency for "Englebert Tyres" which are made in Belgium.

The local service and sales station for the Kelly tire, Ronald S. Longley, manager, has been removed to 357 Fountain street.

The Union Paint & Varnish Co., 51 Exchange place, this city, has taken the local agency for Tyrian tires, manufactured by the Tyer Rubber Co., of Andover, Massachusetts.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent

A NEW company, to be known as the Stott-Strugnell Co., has been formed in San Francisco, with headquarters on Geary street near Polk, composed of Whitney Stott and H. W. Strugnell, both of whom are well known in the automobile industry of the coast. This company will act as Northern California distributors of Batavia tires, the product of the Batavia Rubber Co., of Batavia, New York.

* * *

B. H. Pratt, Pacific Coast manager of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, in commenting recently on the number of automobile clubs, etc., planning trips to California during the progress of the Panama-Pacific Exposition and on the extent and growth of the automobile and associated industries generally, had some interesting things to say of the occupation of chauffeur which the automobile has created. Mr. Pratt states that far from being on the plane of the coachman of yesterday, the chauffeur of today is not a driver of a conveyance but a private engineer, and to be successful he must have a mechanical knowledge even in advance of the railroad engineer; must be equipped with a practical knowledge of tire construction and repairs; must be a student, keeping abreast of the times in automobile construction and interested in advancements to come; as well as sober, industrious and temperate. In fact, he states, "Instead of serving in a menial position, the professional chauffeur is following an occupation that is, and will be hereafter, considered most honorable."

One of the first big steamers to pass through the Panama Canal is to bring a full shipload of tires from the factory in Massachusetts to the Los Angeles branch of this concern, Mr. C. O. DuMars, branch manager, having been advised of the chartering of a vessel for that purpose. To give an idea of what a shipload of tires means it might be said that the number of casings in the cargo would fill ten freight cars, constituting a train load. These tires will come direct to the new city harbor at San Pedro, for distribution from Los Angeles to all the coast agencies of the Fisk company.

* * *

One company which has been seriously affected by the war in Mexico is the Savage Tire Co., of San Diego, most of whose crude rubber supplies and compounding chemicals are shipped to California from the east over the Tehuantepec National Railroad across Mexico to Salina Cruz and thence by steamer up the coast. The seizure by the Constitutionalists of one of the passes through which this railroad runs has closed this part of the road to freight traffic, making it necessary for the Savage company to have its supplies forwarded by a 48-day route leading through the Straits of Magellan.

* * *

The Pacific Rubber & Tire Manufacturing Co. has recently been organized in Seattle, Washington, with a capital stock of \$25,000, all paid in, to manufacture automobile tires and tubes. The stockholders and trustees of the new concern are B. L. Gates, C. A. Kilbourne, H. C. Ewing, Judge Arthur B. Griffin and E. L. Webster. The site of the plant—which it is said will employ more than 150 men at the start and turn out 150 tires a day—has not been definitely decided upon, but it will probably be either on the west shore of Lake Washington or in the Duwamish River valley, both of which sections are under consideration. The expectations are that the erection of the factory will be completed by the time the machinery is ready for installation. This machinery, the manufacture of which will require four months' time, is said to have already been ordered.

This company will inaugurate the following rather unique selling plan: Gold certificates, profit-sharing and bearing interest, in denominations of \$50 and \$100, will be sold to customers—the \$50 ones to those using the smaller size tires and the \$100 variety to those using tires of the larger size—the holders of certificates being entitled to purchase tires at wholesale prices.

* * *

F. B. Kendall has been appointed manager of the Seattle branch of the Firestone Tire & Rubber Co.

* * *

The item which appeared in the June number of THE INDIA RUBBER WORLD, page 489, mentioning a new local sales branch in San Diego just opened by the B. F. Goodrich Co., was incorrect. The Goodrich concern has had a stock depot at this point for the past two years, which is still being operated and which the company intends to continue to operate as in the past.

* * *

An enterprising concern and one which is meeting with success is the Imperial Valley Trading Co., of which G. Charles Builen is president and manager, and which operates a line of motor trucks between the fruit and vegetable growing districts of the Imperial Valley and San Diego. This trip is made in eleven hours, or about one-fifth the time required by horse-drawn vehicles, fruit picked in the afternoon being delivered in San Diego the next morning. The company now has 13 Moreland trucks in operation, has ordered two additional trucks and expects within a few months to have ten others engaged in the service. All the trucks so far in operation by this company are equipped with United States tires.

The Tire Shop, at Stockton, California, which commenced business in January of this year, as agents for Michelin and Diamond tires, is doing a very satisfactory business.

New Rubber Goods in the Market.

LATE STYLES IN BATHING CAPS AND ACCESSORIES.

EACH succeeding summer brings with it new styles in bathing caps, which as a rule follow as closely as possible the prevailing modes in millinery; but the array of styles and colorings available to the bathers of this particular season is even



From Franklin Simon & Co.

BATHING CAPS TRIMMED WITH RUBBER ROSES AND ROSETTES.

larger than usual, and includes bonnets, caps and hats in endless variety and in all the most desired shades, made of rubber, as



From Franklin Simon & Co.

RUBBERIZED SILK TURBAN AND BRIGHT HUED ALL RUBBER CAP.

well as of rubberized satin, etc., and adorned with berries, fruit, leaves, flowers and ribbon—all of rubber or rubberized to stand



From Sals & Co. Photo by J. L. Feder.

ALL-RUBBER SAILOR COLLAR AND RUBBER BUCKLES.

any amount of wetting in either salt or fresh water. Four especially attractive models are here illustrated. The first is an all-

rubber cap, which can be obtained in blue, cerise or emerald green, with the rubber rose at the side in contrasting color. The second model, with rosette trimming, is of the "Castle" type and comes in black and navy blue. The third model is a rubberized silk turban and is made in black, navy blue and purple, with the wired donkey ears of the same material as the cap. The last of the four is an all-rubber cap, decorated with velvety rubber flowers and obtainable in blue, cerise, coral and purple.

But the manufacturers of rubber goods have not been content this season to supply a variety of new and pleasing models in bathing caps. They have extended their line of accessories for the bathing costume to include numerous other articles, several of which are also shown. The first of these cuts shows an all-rubber sailor collar, the edge of which is decorated with tiny rubber roses—something that is bound to add an air of up-to-dateness to any bathing suit. This cut also shows a pair of rubber buckles, a decoration that can be appropriately applied not only to the belt or girdle, but with perhaps even greater effective-



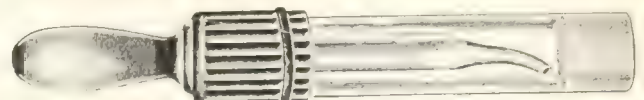
Photo by J. L. Feder.

RUBBER GIRDLE AND CAP.

ness to the bathing ship-pers, which have heretofore presented rather a bare appearance because of the lack of a buckle that would withstand the effects of frequent immersion in salt water. The next figure shows a bather to whose costume has been added a rubber sash or girdle, which closes under a bunch of rubber flowers, the ends of the sash being in Roman stripes in colors to match the plaid cap. As will be noted, this bather is also equipped with a cape of rubber, an accessory which has become very popular this season for wear over the bathing suit. Wreaths of rubber roses are also obtainable for use in trimming the extremely popular beach hat—and they are very genuine appearing and highly decorative. In fact, the line of rubber accessories for the present season has reached a degree of elaborateness never before attained, and would seem to be complete.

"EYE-SNAP."

"Eye-Snap" is the name of a new treatment for tired and aching eyes, and it is offered to the public in the form of a powder contained in a vial with a unique dispenser inserted



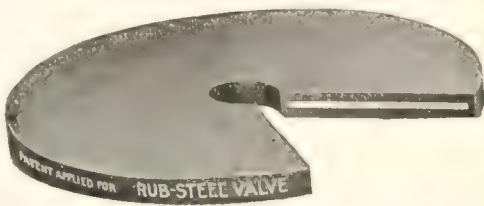
through the cork, as here illustrated. A corrugated cap at the top of the vial keeps out air and dust, insuring perfect keeping quality of the powder and absolute sanitation. To use, the vial is filled with warm water and shaken until the powder is

thoroughly dissolved, when the solution is dropped in the corner

A NEW RUBBER STEEL VALVE

The Voorhees Rubber Manufacturing Co., of Jersey City, New Jersey, have put on the market a new pump valve which has found a very ready sale. This valve, which they term "Rub-Steel" is made by a combination of rubber and steel. The construction consists of a plate of high-grade steel placed in the center of the valve, with a specially tough and lasting rubber composition on each side attached securely to the metal by the company's new "Elchemco" process, which deposits on the steel plate a material in sympathy with rubber and which chemically unites the rubber and steel.

The purpose of the steel plate, of course, is to give great strength to the valve so that the highest pressure cannot warp, twist or get it out of shape, while the rubber surfaces afford the proper seating qualities. This combination gives the valve a rigidity of form which keeps the surface in its normal true position. The inserted steel prevents the high pressure from forcing the valve through the gratings, and the adhesion of the rubber to the steel plate prevents the rubber surfaces from breaking up and the displaced pieces from causing trouble. It has the added advantage that it holds the valve in perfect shape, so that when one side becomes worn, it may be reversed without dressing. By reason of their rigidity, these valves can be made thinner, and therefore secure a greater efficiency for the pump, and they also permit of a softer valve being used for hot water than those in common use. It is claimed that the even distribution of pressure secured prevents "dishing" and the consequent cutting of the valve.



THE "AUTOMASSAGE" SHAVING BRUSH.

The brush shown in the accompanying cut represents the latest improvement in shaving brushes and combines ordinary bristles for application of the lather and a massage device for rubbing it in, both operations being effected at one time. The bristles are "Centuryset" in rubber, and the brush is made in two grades, fully guaranteed. The massage device consists of a cluster of rubber fingers vulcanized in the center of the bristles of an ordinary size brush, and in addition to the saving of time effected, it gives an invigorating massage with every shave. The brushes are sterilized and packed in individual sealed boxes, insuring the consumer a sanitary article which has not been "tried" by previous prospective customers. It retails at popular prices. (The Leopold Ascher Co., 118 Chambers street, New York.)



CLINICAL THERMOMETER IN HARD RUBBER CASE

The accompanying illustration shows the Harvard One-Minute Clinical Thermometer in a case which is also a sterilizer. This case is made of hard rubber, finely finished, and fitted with a diaphragm which makes it possible to carry in the case any desired sterilizing solution and to withdraw the thermometer or to lay down the case without losing a drop of the solution. As the thermometer is withdrawn the diaphragm within the case automatically closes, preventing spilling or

evaporation of the contents; and yet the case is so simple in design that both the diaphragm and the ends of the case may be removed to permit of cleansing the inside of the case. The



one-minute clinical thermometer in the Harvard sterilizer case should be a valuable aid in the sick room. [The Randall-Faichney Co., Boston.]

NO MORE EXCUSE FOR GETTING COLD FEET.

Here is a benefactor who has destroyed the great enemy of mankind—cold feet. He is Levett A. Long, of Dayton, Ohio. And here is the description of his cold feet annihilator.

It is an insole, made of three layers of material. The accompanying illustration shows a top view of the insole with a part of the two upper layers cut away so as to give an idea of the three. The top layer, No. 1 in the figure, is made of some



pervious material, either wool or cotton. The bottom layer, No. 3 in the figure, is of some impervious material, preferably rubber. But the middle layer, No. 2 in the cut, is the one that really does the work, which perhaps may best be described by quoting from the patent specifications: "The upper layer, 1, comes in contact with the sole of the foot. To create a sensation of warmth a suitable chemical irritating medium is provided. This layer is formed of Cayenne pepper or capsicum, and is interposed between the upper and lower layers 1 and 3. The capsicum is preferably mixed with wool and united by any suitable form of binder, such as an antiseptic adhesive. When the insole is in use, the moisture from the feet is sufficient to dissolve a portion of the active principle of the chemical irritant which comes in contact with the sole of the foot when the fabric 1 becomes moistened. The effect of the capsicum will be to draw the blood of the body to the feet, thereby producing a sensation of warmth."

What a boon to the great cold feet family, which constitutes ninety-five per cent. of the human race. When this new invention is in general use—as must shortly come about—the early greeting between friends will no longer be "Good morning! Have you used Pear's soap?" but "Good morning! How is your Capsicum Layer pulling?"

A TRANSPARENT FOUNTAIN PEN.

A new and unique merit has been added to the Parker's "Lucky Curve" fountain pen, which has had earlier mention in these columns. The barrel of the pen is now made of Bakelite which has all the characteristics of hard rubber with the added merit of transparency. With this new device the quantity of ink in the barrel is no longer determined by computations based on memory, weight and specific gravity with or without a table of logarithms. The user holds the Bakelite barrel up to the light and the literally dark mystery is solved. Ease, quickness and certainty of filling are also claimed for the pen. [Parker Pen Company, Janesville, Wisconsin.]



MANUFACTURERS PROTEST AGAINST LEGISLATIVE DISCRIMINATION.

IN conjunction with leaders in other lines of American industry, many rubber manufacturers have sent their protests to their respective senators and congressmen against the legislation now being considered in Washington exempting members of labor organizations from the operation of certain provisions in the anti-trust laws. The secretary of the Rubber Club of America has brought this matter to the attention of the firm members of the club, mentioning particularly these objectionable features of the measures discriminating in favor of labor:

(1) The provision in the Sundry Civil Appropriation bill (in which \$300,000 is appropriated for enforcing the anti-trust laws the coming year) that any of this money shall not be spent in prosecuting labor organizations combining to increase wages, shorten hours of labor or improve labor conditions, or farmers who organize to obtain "fair and reasonable prices for their products."

(2) Section 7 of the Clayton bill providing that labor and agricultural organizations shall not be held to be illegal combinations or conspiracies in restraint of trade under the anti-trust laws.

(3) Section 18 of the Clayton bill which would prevent the courts from using the ordinary process of injunction against certain specified methods employed by labor unions in conducting strikes, such as the boycott, picketing, persuasion of employes who may not wish to listen, etc. The power to issue injunctions is to be limited only in the case of disputes between employers and employes.

He has also mailed to the firm members of the club a sheet, called "Appendix B," issued by the Chamber of Commerce of the United States, giving the exact language of the paragraphs in the pending bills, referred to above,—which are as follows:

EXACT PROVISIONS OF PENDING BILLS.

SUNDRY CIVIL BILL PROVISION.

(H. R. 17041. Making appropriations for sundry civil expenses of the Government.)

"Enforcement of anti-trust laws: For the enforcement of anti-trust laws, including not exceeding \$10,000 for salaries of necessary employes at the seat of government, \$300,000: Provided, however, that no part of this money shall be spent in the prosecution of any organization or individual for entering into any combination or agreement having in view the increasing of wages, shortening of hours or bettering the conditions of labor, or for any act done in furtherance thereof, not in itself unlawful: Provided further, that no part of this appropriation shall be expended for the prosecution of producers of farm products and associations of farmers who co-operate and organize in an effort to and for the purpose to obtain and maintain a fair and reasonable price for their products."

CLAYTON BILL.

(Section 7, Paragraph 1.)

"That nothing contained in the anti-trust laws shall be construed to forbid the existence and operation of fraternal, labor, consumers, agricultural or horticultural organizations, orders, or associations instituted for the purposes of mutual help, and not having capital stock or conducted for profit, or to forbid or restrain individual members of such organizations, orders or associations from carrying out the legitimate objects thereof; nor shall such organizations, orders or associations, or the members thereof, be held or construed to be illegal combinations or conspiracies in restraint of trade, under the anti-trust laws."

CLAYTON BILL.

(Section 18—Injunctions.)

"That no restraining order or injunction shall be granted by any court of the United States, or a judge or the judges thereof, in any case between an employer and employes, or between employers and employes, or between employes, or between persons employed and persons seeking employment, involving, or grow-

ing out of, a dispute concerning terms or conditions of employment, unless necessary to prevent irreparable injury to property, or to a property right, of the party making the application, for which injury there is no adequate remedy at law, and such property or property right must be described with particularity in the application, which must be in writing and sworn to by the applicant or by his agent or attorney.

"And no such restraining order or injunction shall prohibit any person or persons from terminating any relation of employment, or from ceasing to perform any work or labor, or from recommending, advising or persuading others by peaceful means so to do; or from attending at or near a house or place where any person resides or works, or carries on business or happens to be, for the purpose of peacefully obtaining or communicating information, or of peacefully persuading any person to work or to abstain from working; or from ceasing to patronize or to employ any party to such dispute, or from recommending, advising or persuading others by peaceful means so to do; or from paying or giving to, or withholding from, any person engaged in such dispute, any strike benefits or other moneys or things of value; or from peacefully assembling at any place in a lawful manner, and for lawful purposes; or from doing any act or thing which might lawfully be done in the absence of such dispute by any party thereto; nor shall any of the acts specified in this paragraph be considered or held unlawful."

The secretary also encloses another document, issued by the Chamber of Commerce, entitled "Appendix A," which briefly describes the Sherman act and recites the history of the legislation recently passed, and that now being considered, intended to so change the provisions of the Sherman act that in many respects members of labor and agricultural organizations will be exempt from its operation.

Any member of the trade who has not received this communication from the secretary of the Rubber Club would do well to write to the Chamber of Commerce of the United States of America, Washington, D. C., for these two documents, "Appendix A" and "Appendix B."

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

Mr. G. H. Dunn, of Cape Town, South Africa, in the United States for the purpose of securing representation of American manufacturers, is especially interested in india rubber duck, imitation leather, and trimmings for carriages suitable for the South African trade. Mr. Dunn may be addressed at the branch office of the Bureau of Foreign and Domestic Commerce, 315 Custom House, New York. Report No. 13,155.

A report from an American consular officer states that a company in his district desires to be placed in communication with American manufacturers of bandages, corsets, rubber and caoutchouc articles in connection with hygiene, braces, and any novelties likely to find good sale in the country in question; inquirer paying cash for all goods. Correspondence should be in Russian if possible—otherwise in German, or correspondence in English forwarded to the consular officer will be translated and sent to the inquirer. Report No. 13,167.

An American consul in Spain reports that a resident of his district desires prices on American tennis rackets and balls. Full information as to gross and net weights is necessary, in order that he may figure duties, etc., and correspondence, catalogs and discount sheets should be in Spanish. Report No. 13,222.

There is a demand in a European country for heavy rubber overshoes, which are now being used extensively. An American consular officer has forwarded a report on this subject, together with names of local dealers who have expressed a desire to be put in touch with American manufacturers, and a copy of this report may be obtained from the Bureau of Foreign and Domestic Commerce, Washington. Report No. 13,230.

A report from an American consular officer in Manchuria states that a local business man is in a position to answer inquiries from American firms interested in talc and its possible importation in regard to a deposit of a fine grade of this mineral in Manchuria and in regard to possible shipments to the United States. Report No. 13,233.

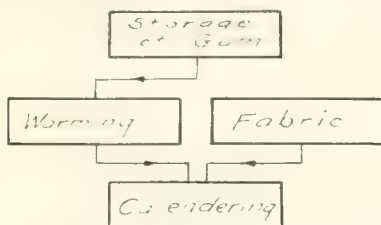
A CALENDER ROOM LAYOUT.

By W. J. Bitterlich

IN looking over some back numbers of THE INDIA RUBBER WORLD the writer came across an article written by Morris A. Pearson, describing a model calender room, which embodied certain mechanical features.

The writer submits a modification of this layout, embodying several features not shown by Mr. Pearson, and considered from an operating point of view for the most economical production. It should, however, be borne in mind that this layout would not hold good for all classes of rubber mills, since the sizes of calenders and mills and the processes of manufacture vary.

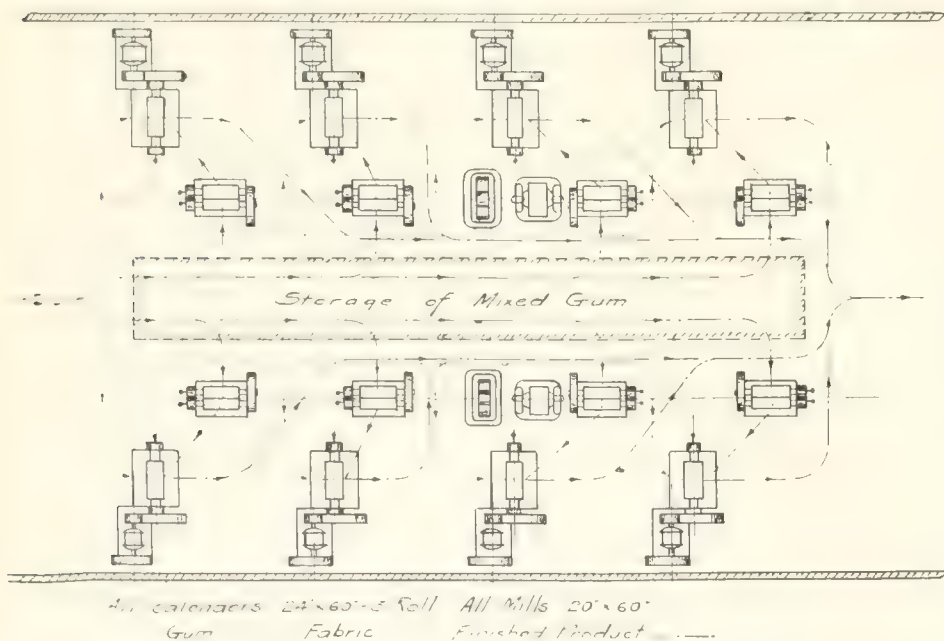
The first essential to the general arrangement of machinery is the routine diagram, which is simply the enumeration, in tabular form, of the several operations.



It should be kept clearly in view that materials in process of manufacture shall flow in one direction to and from the machines in an orderly manner, and without waste of time and energy.

The successful layout of a department involving a sequential arrangement of machinery requires considerable forethought and care, and in many cases much tactful discussion with the foreman of the proposed department.

The routine diagram for this calender room comprises the following.



The essential features of this layout are as follows:

1. The calenders are located near the windows, and the mills nearer the center of the room.

The reason for this arrangement is that the process of calendering, dealing with the product in a more finished stage, demands the best light that the calender room can afford. The function of the mill is merely to warm and soften the gum for the calender.

2. The mill rolls and feed side of the calender rolls are placed as near to each other as is practicable; this with the object of reducing to a minimum the distance traveled by the operator in delivering the batch of gum to the calender.

When one considers that every batch warmed during the

day has to travel from the warmer to the calender, it can readily be seen that the saving in labor accomplished by minimizing this distance is quite important.

In the minimizing of this distance it is necessary to lengthen the distance of travel for fabric and finished product. These, however, are delivered in larger quantities than the rubber batches, and therefore have a less number of journeys to travel.

3. The central portion of the room is devoted to the storage of mixed gum. This allows piling the gum as high as practicable, without obstructing the light, and since rubber is affected by light it should be stored in the darkest part of the room.

With the storage at the sides of the room the light from the side windows would be obstructed when the gum is piled high. While some light may be available from a sawtooth roof with a single story building, it is desirable to obtain all the daylight possible at the calenders from sides and above.

4. Since Mr. Pearson has covered the mechanical features so well, there is little to add. The writer, however, suggests that the building should be of one story, about 20 feet high, equipped with a roof of sawtooth construction, and be spanned by a crane the entire width of the building.

This latter feature would allow for quick removal of rolls, frames, and all other heavy parts requiring renewal and repairs. With the mills in the center the shafting should, of course, be below the floor, otherwise passageway and valuable space would be lost. This can be arranged by building a tunnel; or, better still, a basement, and carrying the foundations of the machinery to the floor below. Then all steam and water pipes would be located in this basement.

THE INCREASING USE OF AIR-PRESSURE GAGES.

Evidence that motorists generally realize that inflation is a decidedly important element in tire service is found in the increasing use of the air pressure gage. Campaigns of education carried on by tire manufacturers are bearing fruit. Experience also has been a good, though perhaps an expensive teacher. The man who pays the bills has found out that if he expects his tires to render good service he must keep plenty of air in them. Under-inflation is the most pernicious abuse to which tires are subjected, according to Mr. J. D. Anderson, of the United States Tire Co. He observes: "Running tires so soft that they will not remain round under load paves the way for a large percentage of the injuries which decrease mileage and increase tire maintenance expense."

"The sidewalls of a tire are its thinnest part, and here most of the bending action takes place when the wheel is turning. If the tire is not given enough air to keep it perfectly round the action of the rim on the sidewalls becomes violent and in a short time the carcass is broken down. We recommend," he continues, "twenty pounds of air to the inch. A four inch tire should be inflated to 80 pounds, a five inch tire to 100 pounds, and so on through the various sizes. It is absolutely impossible to tell whether a tire has sufficient air in it by any amount of feeling or kicking, and here is where many motorists make a big mistake. A tire may appear round and feel hard when as a matter of fact it has only half enough pressure on the inside."

"More air pressure gages are being used this season than ever before and car owners are certain to save a vast amount of good money through this channel."

News of the American Rubber Trade.

RUBBER CLUB OUTING JULY 14.

THE annual midsummer outing of the Rubber Club of America will be held in Boston and its environs on July 14.

In the morning there will be a golf tournament at the Wollaston Golf Club, under the general management of Philip E. Young, of the Acushnet Process Co., New Bedford. At 1 o'clock the steamer "Griswold" of the Boston and Nahant line will leave Otis Wharf and after a sail through the harbor dock at Peddock's Island, where the annual ball game will take place. The contest this year will be between the Married Men and the Single Men, the former under the captaincy of James J. Clifford, of the Boston Woven Hose & Rubber Co., of Cambridge, and the latter captained by Henry G. Tyer, of the Tyer Rubber Co., of Andover. John S. Clapp, of the Boston office of the New Jersey Rubber Co., will be general manager of the ball game.

After the game the members will again embark and will sail to the Point Shirley Club, at Winthrop, where, after a quoit tournament and the running of an obstacle race, they will sit down to one of those shore dinners which years ago made Point Shirley famous.

The committee is making unusual preparations, in the hope that this will be the most successful outing the club has ever had.

RUBBER COMPANY DIVIDENDS.

The Converse Rubber Shoe Co., of Boston, paid on June 1 a regular semi-annual dividend of $3\frac{1}{2}$ per cent. on its preferred stock, to stockholders of record on May 21.

The Rubber Goods Manufacturing Co., of New York, paid on June 15 a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock and a dividend of 1 per cent. on its common stock, to stockholders of record on June 10.

The Apsley Rubber Co., of Hudson, Massachusetts, has declared a regular semi-annual dividend of $3\frac{1}{2}$ per cent. on its preferred stock, payable July 1 to stockholders of record on June 25.

The B. F. Goodrich Co., of Akron, has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock, payable July 1 to stockholders of record on June 19.

The Kelly-Springfield Tire Co., of New York, has declared a quarterly dividend of $1\frac{1}{2}$ per cent. on its 6 per cent. preferred stock, and a dividend of $1\frac{3}{4}$ per cent. on its 7 per cent. second preferred stock, payable July 1 to stockholders of record on June 24.

The Boston Belting Co., of Boston, has declared a quarterly dividend of two dollars (\$2) per share, payable July 1 to stockholders of record on June 15.

The Mohawk Rubber Co., of Akron, has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock, and a dividend of $1\frac{1}{2}$ per cent. on its common stock—both payable July 1.

The Portage Rubber Co., of Akron, at its meeting on June 18, declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock.

The United States Rubber Co., of New York, has declared a regular quarterly dividend of 2 per cent. on its first preferred stock, a dividend of $1\frac{1}{2}$ per cent. on its second preferred stock and a dividend of $1\frac{1}{2}$ per cent. on its common stock—payable July 31 to stockholders of record on July 15.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the world.

SECOND DATE SET FOR WALPOLE SALE.

July 8 has been set as the date of the second auction sale of the plant and business of the Walpole Tire & Rubber Co., now in the hands of receivers. No upset price has been fixed by the court, but each bid must be accompanied by a deposit of \$60,000 to insure its validity, and it has been decided to sell the entire property as a going concern. The receivers have also been authorized to declare a second dividend of 4 per cent.—making a total of 8 per cent. paid on all approved claims against the company—for which purpose the sum of \$50,000 has been set aside.

GOODRICH SHOE TICKET 15,000 PAIRS.

A great many people, even in the rubber trade, have become so accustomed to associating the name Goodrich with tires and mechanical goods that they will be quite surprised to learn that the footwear department of that big plant is turning out a ticket of 15,000 pairs of boots and shoes per day. The selling manager of the footwear department is exceedingly optimistic over the footwear outlook for his company.

RUBBER RECEIVED FROM AN AMERICAN PLANTATION.

The General Rubber Co., which looks after the crude rubber supplies of the United States Rubber Co., recently received its first consignment of rubber from the company's great 35,000-acre plantation in Sumatra. This consignment consisted of 1,000 pounds of corrugated smoked sheet and came from that part of the big plantation known as Langkum.

THE PHILADELPHIA RUBBER WORKS OPEN NEW YORK OFFICE.

The Philadelphia Rubber Works Co., which has large reclaiming plants in both Philadelphia and Akron, has recently opened a New York office, in the Vanderbilt Avenue Building, corner of Forty-second street and Vanderbilt avenue. This is in charge of John S. Lowman, who has hitherto been manager of the Akron office. There will still continue to be an office in connection with the factory at Akron, but all the general business hitherto carried on through the Akron office will now be taken care of in this new New York office.

COMMERCIAL ARBITRATION.

The report of the committee on commercial arbitration connected with the Chamber of Commerce of the State of New York was submitted at the one hundred and forty-sixth annual meeting of the New York Chamber of Commerce on May 7. As this subject is one that now occupies the minds of commercial leaders, this report will be found to be of unusual interest. The work done by the committee during the past year has confirmed the faith of its members in the practicability and scope of arbitration as a means of settling commercial disputes. They are further confirmed in this belief by the keen interest shown in the results of their work by other commercial organizations, not only in the United States but abroad, a number of which, after careful investigation, have adopted, either in whole or in part, the rules and regulations used by the Chamber of Commerce in its arbitration proceedings.

The committee has given a great deal of time and attention to the subject of enacting a model commercial arbitration law, uniform for all states. The draft of such a law has been prepared by Mr. Julius H. Cohen, a prominent member of the New York Bar. A copy of this model law which the committee hopes to see adopted in the various states is given as an appendix to the report. It consists of 29 short paragraphs occupying about 5 pages of the report and will be found well worth reading by anyone at all interested in this most important subject.

FINANCIAL STATEMENT OF THE UNITED STATES TIRE CO.

The United States Tire Co. has filed with the Massachusetts secretary of state a statement of its financial condition, dated March 31, 1914, compared with the previous year, which is as follows:

ASSETS.		
	1914.	1913.
Real estate and investments.....	\$91,953	\$330,474
Merchandise, etc.....	6,192,380	9,395,452
Cash and debts receivable.....	5,475,129	4,193,728
Total	\$11,759,462	\$13,919,654
LIABILITIES.		
Capital stock	\$500,000	\$500,000
Accounts payable	11,158,978	12,925,511
Reserve	100,484	494,143
Total	\$11,759,462	\$13,919,654

TIRE PRICES.

In a recent number of an automobile journal mention was made of a new tire list issued by the Packard Motor Car Co., of New York, in which the prices of Ajax, Batavia, Fisk, Kelly-Springfield and Republic tires had been advanced, while the "Nobby" tread type had been reduced over \$3 in price. This was an error, the prices of these various tires remaining unchanged. It seems that the Packard company recently issued a tire price list to owners in which the mistake was made of quoting dealers' prices, and that later the new and corrected list of retail prices was sent out, which showed the changes mentioned in the paragraph referred to.

The Wood-Milne Co., Ltd., of Leyland, near Preston, Lancashire, has revised its prices on solid rubber tires, the latest list showing a reduction.

THE CHEMISTS' CLUB.

With a membership grown from 89 in 1898 to its present number of 1,187, the Chemists' Club has ground for claiming to be a national institution. Originally located at 108 West Fifty-fifth street, the expansion of its usefulness called for larger quarters. In 1911, through the magnanimous action of many friends, it was housed in its present location, at 52 East Forty-first street, where it occupies the lower five floors of an eleven-story fire-proof structure. The upper six floors are let to chemists for offices and laboratories.

The auditorium, known as Rumford Hall, has a seating capacity of 310, while the library contains 16,000 volumes, including sets of 800 journals. The users of the library have increased from 82 in the month of June, 1911, to a monthly average of 347 during 1914. Guest rooms occupy two floors and have the best hotel service.

Going beyond the ordinary functions of a library, that section of the institution has special services at the disposal of members, by which the staff can make searches, compilations and translations on any given chemical subject. The Department of Research carries this idea still further.

Another feature of the club's usefulness is the employment bureau, which aims to provide employers with chemists and chemists with positions. This branch has placed upwards of 500 chemists within the last 8 years.

The officials are: President, Charles F. McKenna; vice-presidents, Ellwood Hendrick and K. P. McElroy; secretary, John E. Teeple; treasurer, Laurence Hutton Hendricks.

Such are the principal features of the club as shown by the year book for 1914. In a bright pamphlet William L. Dudley, of Vanderbilt University, Nashville, Tennessee, has told the story of the rise of the institution to its present importance; giving an interesting account of the advantages it places at the disposal of its members.

TRADE NEWS NOTES.

The capital stock of the R. J. Caldwell Co., commission merchants and large dealers in cotton duck and special fabrics, of 15 Park Row, New York, has recently been increased to \$200,000.

The Federal Rubber Manufacturing Co. is again adding to its factory at Cudahy, Wisconsin, and by the end of the season the already extensive plant will be considerably increased in size and capacity.

A company has lately been incorporated in Boston, with a capital stock of \$50,000, by Harry A. Clapp, Lester M. Bacon and Frank O. White, to be known as the Eastern Inter-Rim Co.

The new home of The B. F. Goodrich Co.'s Detroit branch, located at Hancock and Woodward streets, is not only a very attractive, but a very substantial structure, of reinforced concrete, and contains approximately 80,000 square feet of floor space, of which an area comprising 6,000 square feet is devoted to the service station, while the tire storage space will take care of 200,000 tires, without mentioning mechanical goods and sundries.

The plant of the Mexican Crude Rubber Co., at Detroit, destroyed by fire on May 15, as mentioned in our June number, page 491, is said to have been fully insured and will probably be rebuilt.

The Hazard Manufacturing Co., of Wilkes-Barre, Pennsylvania, which manufactures rubber covered wires and cables for light, power, telephone and railroad signal work, wire rope, etc., has removed its New York offices from 50 Dey street to 533-541 Canal street.

Automobile tires will constitute the product of the Saugus factory of the American Tire Co., of Avon, Massachusetts, recently purchased from the Sagamore Rubber Co.

The Xenia Rubber Manufacturing Co., of Xenia, Ohio, which in the past has manufactured only mechanical rubber goods, is said to have plans under way for the erection of a factory at Dayton, Ohio, where automobile tires will be manufactured.

Among the exhibitors at the thirty-seventh convention of the National Electric Light Association, held at Philadelphia, early in June, were the Standard Underground Cable Co., of Pittsburgh, whose exhibit included various kinds and sizes of insulated wire, and the John A. Roebling's Sons Co., of Trenton, which showed samples of a similar line of production.

October 17 to 24 has been fixed as the date of the Automobile Show at Pittsburgh, Pennsylvania, to be held under the auspices of the Automobile Dealers' Association of that city.

A rubber-tired six-ton electric truck which has been put in use at Galveston, Texas, for carrying bales of cotton between the compress and the docks, is said to be performing more economically, speedily and satisfactorily the work formerly done by six mules.

If present plans are successfully executed, a modern plant will soon be in operation at San Antonio, Texas, for the manufacture of tires and rims for automobiles and other vehicles. This company, not yet incorporated but stock in which is offered for sale by J. A. Walsh, Moore Building, that city, is known as the Luck Tire & Manufacturing Co. and is intended to manufacture tires under patent granted to John J. Luck, of 119 Hicks avenue, San Antonio.

The Delage car which, driven by Rene Thomas, won the Memorial Day automobile race at Indianapolis, will be driven by Billy Knipper in the race to be held at Sioux City on July 4; and in this event it will be equipped with Firestone tires. This is also true of the car to be driven by Barney Oldfield.

Mr. E. W. Snyder, for some time superintendent of the American Tire & Rubber Co., of Akron, Ohio, has severed his connection with that company.

PERSONAL MENTION.

Mr. George B. Hodgman, president of the Hodgman Rubber Co., and also president of the Rubber Club of America, sailed on the "Olympic" on June 20 for a few weeks in England and on the Continent. He went first to London to visit the rubber exhibition, expecting later to visit Berlin, Paris and other points. He will return about August 1.

Mr. F. C. Hood, general manager of the Hood Rubber Co., Watertown, Massachusetts, sailed for Europe on June 23, with the expectation of remaining until September.

C. L. Garrison has been appointed manager of the Miller Rubber Co.'s branch just opened at St. Louis, Missouri, and F. W. Staley has been engaged as traveling representative for Illinois and Missouri, where he was formerly manager of the Diamond Rubber Co. branch.

An inventory of the estate of the late George H. Hood, of the Hood Rubber Co., Boston, places its value at \$472,447.86, chiefly personal and composed of bonds and stocks of various corporations, the realty holdings being valued at \$15,000.

At a recent meeting of the directors of the Post-Graduate Medical School and Hospital, of New York, James C. Brady, son of the late Anthony N. Brady and a director in the United States Rubber Co., was elected a director of the hospital board.

John E. Whitmyer, who has lately returned from a honeymoon vacation spent in the White Mountains, has been promoted from a position in the sales force of the United States Tire Co. to the management of the Worcester, Massachusetts, branch of that company, succeeding William B. Ellenbeck, Jr., who has become associated with another tire concern in New York.

Harry S. Quine, secretary to President Seiberling of the Goodyear Tire & Rubber Co., Akron, was overcome by heat during the first hot wave of the season, while adjusting the engine of his automobile on his way home from work. He was found prostrated in the street and carried to the residence of a physician, where he was revived.

Clarence L. Weaver, of the Banigan Rubber Co., Providence, has just returned from a trip to Europe. During this trip, taken in company with Mrs. Weaver, and which he describes as being one of uninterrupted pleasure, England, France, Switzerland, Italy, Belgium, Holland and Germany were visited.

Among those who sailed for Europe on the "Adriatic" on June 11 was Dr. J. J. Thompson, chief chemist of the Federal Rubber Manufacturing Co., of Cudahy, Wisconsin. During his stay abroad Dr. Thompson expects to visit a number of the rubber manufacturing centers for the purpose of studying conditions, as well as to attend the London Rubber Exposition.

The Chamber of Commerce of the State of New York has compiled a list of its members who are ready to act in the capacity of arbitrators in cases of commercial dispute submitted to that body for settlement. The members listed for arbitration in rubber disputes are William Hillman, Theodore S. Hodgman and Barnham Yardley.

Miss Edith Marion Bass, daughter of Mr. William Frederick Bass, vice-president and general manager of the General Rubber Co., was married on June 13 at her father's residence, 77 Eighty-second street, Brooklyn, to Mr. M. Henry Keip, Jr. Mr. Keip is a graduate of Cornell, class of 1910, and is engaged in business in New York.

Theodore Hofeller, president of Theodore Hofeller & Co., of Buffalo, New York, and prominent in the waste rubber industry, sailed on the "Kronprinzessin Cecilie" on June 16, for a three months' pleasure trip to Europe. The tour, on which he was accompanied by his wife, will include visits to Austria, France, Germany and Switzerland.

Mr. Albert D. Thornton, superintendent of the Canadian Consolidated Rubber Co., was married to Miss Jean A. Hannah,

daughter of Mr. and Mrs. James W. Hannah, at the First Presbyterian Church in Montreal on June 3.

Mr. Clarence Guild, who for the last seven or eight years has been an assistant to the general manager of the United States Rubber Co., at the New York office, was married on June 3 to Miss Helen McIlvain, of Brooklyn.

Mr. L. R. Macphail, who has been associated for some time with The Waterhouse Co., of Honolulu, in charge of their interests at Singapore, passed through New York the middle of June on his way home to England for a few months' vacation. He met a number of the prominent rubber men of New York, and gave an interesting account of the situation in the East. He expects to return to Singapore about the last of the year.

MR. BROMLEY OF COLOMBO IN NEW YORK.

Mr. H. J. Bromley, representing Bosanquet & Co., rubber shippers of Colombo, Ceylon, is registered at the Holland House in New York. He intends to remain in this city until the middle of July and expects before leaving to arrange with one of the New York importers for the direct shipment of Ceylon rubber from his company to this port.

MR. MULLEN BECOMES NEW YORK AGENT.

William F. Mullen has recently been appointed New York agent of the United Malaysian Rubber Co., Ltd., of London, in place of J. Warren Bird, who lately resigned that position. Mr. Mullen has been with this company ever since it was organized, being one of its traveling representatives, so that he has a thorough knowledge of the requirements of the position to which he has been promoted.

CHANGE IN PATTERSON RUBBER CO. MANAGEMENT.

The Patterson Rubber Co., of Lowell, Massachusetts, incorporated in October, 1912, has recently been reorganized, the former president and vice-president, John S. and James M. Patterson, having resigned and disposed of their holdings in the company. The original organizers of the company were John S. and James M. Patterson, F. H. Appleton, F. H. Appleton, Jr., and George F. S. Singleton. The last three, while not active in the management of the company, continue their interest and holdings in it. The business is now being carried on by John L. Morse, treasurer, and Walter N. Macdonald, factory manager, both of whom are extremely optimistic regarding its future prospects. This company manufactures automobile tires and tubes exclusively, its factory having a capacity of about 200 tires per day, and it is said that indications point to a necessity for increased facilities in the near future.

RAVAGES OF THE BOLL WEEVIL.

In a statistical report the Bureau of the Census points out that the Mexican Boll Weevil first appeared in Southern Texas in 1892, and has since steadily advanced northward and eastward. The total area infested in 1913 has been estimated by the Department of Agriculture at 296,500 square miles, while the total loss thus caused in the production of cotton in the United States is believed to be in excess of 10,000,000 bales, representing \$500,000,000. In addition to these losses, a further reduction would be represented by the total or partial abandonment of cotton growing by many farmers.

The boll weevil has infested a large part of Texas, a considerable portion of Oklahoma and Arkansas, practically all of Louisiana and nearly all of Mississippi. It is now in the southern part of Alabama, in Western Florida and within a few miles of Georgia, which State it will probably invade in 1914.

As to methods for combating the evil, authorities have recommended the destruction of the infected plants in the fall by pulling up and burning the stalks. October is the most favorable time for this work, though a good deal can be accomplished in November. Conditions throughout the cotton belt vary considerably. Some methods may be more beneficial in some sections than in others, but it is believed that the above are applicable to all sections and will greatly minimize the destructiveness of this pest and mitigate the losses following its appearance.

NEW INCORPORATIONS.

Airplex Inner Tire Co., June 11, 1914, under the laws of Missouri; authorized capital, \$3,000. Incorporators: Richard M. Howe and James J. Howe—both of Webster Groves—and Stanton Palmer, St. Louis—all in Missouri. To buy, sell and manufacture articles of rubber and rubber substitutes and deal generally in automobile tires, etc.

Automobile Tire Cooling Co., May 15, 1914, under the laws of New Jersey; authorized capital, \$125,000. Incorporators: Dexter Ball, Allan Lindsley and Caleb C. Leonard—all of 504 Main street, Asbury Park, New Jersey. The objects of the company are the selling of the rights and territory to manufacturers of automobiles, dealers in automobiles and owners of automobiles, of a certain patented process or device for cooling automobile tires and for the manufacture and sale of all articles that may be used in connection with said device for cooling the tires of automobiles, and all electric, steam, or gasoline driven vehicles.

B & J Tire & Rubber Co., Inc., May 12, 1914, under the laws of New York; authorized capital, \$10,000. Incorporators: John W. Bebus and Edward A. Jacobs—both of 253 West Fifty-eighth street, New York City.

Conant, Houghton & Co., Inc., June 5, 1914, under the laws of Massachusetts; authorized capital, \$50,000. Incorporators: Waldo E. Conant, Daniel G. Houghton, Harold W. Conant—all of Littleton—and Elihu G. Loomis, Bedford—all in Massachusetts. To manufacture and sell elastic and non-elastic fabrics and components thereof, trimmings, elastic and non-elastic braids and wearing apparel.

Continental Asbestos Corporation, June 9, 1914, under the laws of Massachusetts; authorized capital, \$200,000. Incorporators: John H. Savery, 15 Winifred avenue; Frank L. Backus, 7 Summer street, and George H. Warrell, 1 Benefit street—all in Worcester, Massachusetts. To manufacture and sell asbestos lubricants and the purchase and sale of asbestos and oils.

Davis-Fry Manufacturing Co., March 4, 1914, under the laws of California; authorized capital, \$5,000,000. Incorporators: George L. Davis, Jay C. Fry, Bertha M. Davis—all of Oakland—John Roddan, Alameda, and Orville E. Jackson, Berkeley—all in California. To manufacture and handle the "Hurley Hercules Patents."

Eastern Inter-Rim Co., May 19, 1914, under the laws of Massachusetts; authorized capital, \$5,000. Incorporators: Harry A. Clapp, 28 West Sixty-third street, New York City, and Lester M. Bacon, and Frank O. White—both of 60 State street, Boston, Massachusetts. To manufacture, sell and repair automobiles and motors of all kinds, etc.

Excello Tire & Rubber Co., June 12, 1914, under the laws of Delaware; authorized capital, \$500,000. Incorporators: Franklin L. Mettler, Daniel Farra—both of Wilmington—and Alfred Whartenby, Hollyoak—all in Delaware. To deal in and act as agent for automobile and any other vehicle tires, tubes and all kinds of rubber goods.

Independence Tire & Rubber Co., Inc., June 12, 1914, under the laws of New York; authorized capital, \$5,000. Incorporators: L. Walter Lissberger, Hotel Wellington; Henry L. Lewis, 426 East Eighty-sixth street, and Frank H. Gross, 1650 Broadway—all in New York City.

Interchangeable Heel Co., May 15, 1914, under the laws of Delaware; authorized capital, \$200,000. Incorporators: Martin E. Smith, Francis B. Hooper and A. E. Smith—all of Wilmington, Delaware. To manufacture and deal in detachable and interchangeable heels made of rubber, etc.

National Rubber Co., Ltd., The, March 28, 1914, under the laws of Canada; authorized capital, \$500,000. Incorporators: C. S. Kilgour (president), F. E. Walker (vice-president), Dr. Geo. Wenig (secretary and treasurer), C. L. Boyd and A. P.

Rumsay. Principal office, Hamilton, Ontario. To manufacture automobile tires and tubes and other rubber goods.

New York Steam Auto Tire Works, Inc., June 22, 1914, under the laws of New York; authorized capital, \$10,000. Incorporators: John J. Foley, Minnie Beck and J. A. Callanan—all of 32 Nassau street, New York City.

Reliable Auto Tire Co., April 10, 1914, under the laws of Missouri; authorized capital, \$3,000. Incorporators: Joe Sacks, Louis Wyner and Ben J. Sacks—all of St. Louis, Missouri. To buy and sell, at wholesale and retail, tires of all kinds for automobiles, etc.

Spartan Tire & Rubber Co., Inc., June 9, 1914, under the laws of New York; authorized capital, \$100,000. Incorporators: Harry L. Graff, 248 West One Hundred and Fifth street; Henry Feuchtwanger, 147 West Fifty-fifth street, and H. W. Newburger, 17 Livingston Place—all in New York City.

Sussex Rubber Co., The, June 1, 1914, under the laws of New Jersey; authorized capital, \$50,000. Incorporators: Charles F. Teigeler, Alfred J. Teigeler—both of 194 Union avenue—William M. Sharpe, 202 Carmita avenue, and James W. Miller, 143 Mountain Way—all in Ruthersford, New Jersey. To deal in rubber tires, rubber goods, etc.

Ten Broeck Tire Co., April 9, 1914, under the laws of Tennessee; authorized capital, \$500,000. Incorporators: S. S. Adams, Jr., John G. Gray and M. B. F. Hawkins. Principal place of business, Louisville, Kentucky. To manufacture, buy and sell automobile accessories.

Tubine Co., Inc., June 3, 1914, under the laws of New York; authorized capital, \$10,000. Incorporators: Osmer S. Burr, 23 Barclay street; Achille Brile, 102 West Fifty-fourth street, and Fred Rosenbaum, 2345 Eighty-third street—all in New York City. Tire fillers, repairs, etc.

Vulcan Fibre Co., May 18, 1914, under the laws of Massachusetts; authorized capital, \$200,000. Incorporators: J. E. Carr, 159 Dartmouth street; J. R. Davies and Edward Haberstroh—both of 617 Tremont street—all in Boston, Massachusetts. To manufacture rubber goods, rubber materials and rubber compounds and the machinery for producing such materials.

RECENT CUSTOMS RULING.

A decision has been rendered by the Board of Reappraisers affecting the importation of rubber balls. The shipment involved in the ruling was forwarded to New York by the London agents of an Austrian manufacturing concern. Upon arrival at this port the appraiser advanced the invoice values about 70 per cent. ad valorem and duty on the higher basis was demanded, together with accruing penalties. At the hearing it was brought out that orders were given by the New York importers to the London agents for shipment of the Austrian balls through England because of the fact that export prices for such goods are lower in England than in Austria, owing to British competition. The Board of Appraisers decided that the balls were properly invoiced on the basis of the prevailing market prices in England, thus reversing the decision of the single appraiser.

The report of the American Telephone & Telegraph Co., lately issued, gives the quantity of wire in use in the operation of its telephone lines in the United States at the close of 1913 as follows: Underground wire, 8,817,815 miles; submarine wire, 31,833 miles; aerial wire, 7,261,363 miles—total, 16,111,011 miles.

Rubber soled shoes, especially in women's lines, are more popular than ever this year, being worn not only in sport events but regularly.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE NEW KELLY-SPRINGFIELD STOCK.

More than 90 per cent. of the 4 per cent. income debenture bonds of the Kelly-Springfield Tire Co. having been deposited with the Bankers Trust Co., directors of the tire company have authorized the bankers to issue in exchange new 6 per cent. cumulative preferred stock par for par. The board also directed that the 78½ per cent. accumulated dividends on the present issue of preferred stock be paid in 7 per cent. cumulative second preferred stock. No fractional shares of the second preferred will be distributed, cash being paid in lieu of fractional parts of stock to which holders of the preferred may be entitled.

NATIONAL TIRE & RUBBER PLANT OPENED JUNE 10.

The factory of the National Tire & Rubber Co., at East Palestine, Ohio, work on which was started about November 1, 1913, was formally opened on June 10, when 700 persons accepted the invitation extended by the management to visit the new plant and observe its operation. Active work at this factory—which is the third rubber plant in operation in East Palestine—commenced on Monday, June 8. The present equipment and capacity of the plant will allow of an output of 500 tires per day. The product will consist of the "Capitol" non-skid tire and "Red Man" and "Grey Paragon" tubes. The plant is of fireproof construction, reinforced concrete, with Fenestra steel sash and corrugated glass.

The line mill machinery installed in this plant is the product of the Turner, Vaughn & Taylor Co., of Cuyahoga Falls, Ohio; the tire building machines and the vulcanizers were made by the Adamson Machine Co., of Akron, and the vacuum drying apparatus is from the plant of the Buffalo Foundry & Machine Co., of Buffalo, New York.

A MOVEMENT TO INCREASE FOREIGN TRADE.

The National Foreign Trade Convention, held at Washington May 27 and 28, has resulted in the organization of a National Foreign Trade Council—composed of thirty men nationally prominent and representative of the industrial, commercial, transportation and financial industries of the country—whose purpose it is to awaken America to a realization of "her privilege and her power in foreign trade." The movement sprang from a belief on the part of industrial leaders that the prosperity of the country depends upon increased export trade and in the necessity for co-ordination of the nation's foreign trade activities.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on June 20 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., Common.....	220	
Ajax-Grieb Rubber Co., Preferred.....	99	
Firestone Tire & Rubber Co., Common	300	305
Firestone Tire & Rubber Co., Preferred.....	108	109½
The B. F. Goodrich Co., Common	24½	24
The B. F. Goodrich Co., Preferred	88½	90
Goodyear Tire & Rubber Co., Common	170	175
Goodyear Tire & Rubber Co., Preferred	97	99
Kelly-Springfield Tire Co., Common.....	59	62
Kelly-Springfield Tire Co., Preferred	143	146
Miller Rubber Co.....	139	142
Portage Rubber Co., Common		40
Portage Rubber Co., Preferred		90
Rubber Goods Mfg. Co., Preferred.....	100	110
Swinehart Tire Co.....	85	87
United States Rubber Co., Common	58½	59
United States Rubber Co., 1st Preferred.....	103	103½

TRADE NEWS NOTES.

William H. Scheel, 159 Maiden Lane, New York, is offering rubber manufacturers a high grade tested Brilliant Vermillion as a substitute for English Vermillion.

The Harris Tire Co., for the past eight years engaged in a general tire repair and sales business at Perry and Drayton streets, Savannah, Georgia, has recently filed application for incorporation, the petition including a clause whereby if desired the company will be able to manufacture automobile tires, although it is not the present intention to engage in this line of manufacture.

A company has been formed on Long Island with \$10,000 capital stock to manufacture rubber tires and other rubber goods. It is known as the Forbes Rubber Co., and the incorporators are Thomas C. Forbes, Jr., George V. and Anna S. Sloat—all of Freeport.

Contracts for fire hose equipment of various cities recently awarded have included the following: Cloquet, Minnesota, 400 feet of Empire Rubber & Tire Co.'s "Paragon" hose to the Plant Rubber Co., of Minneapolis; Woonsocket, Rhode Island, 1,000 feet to the United & Globe Manufacturing Cos.; Lockport, New York, 350 feet to the Empire Rubber & Tire Co. and 150 feet to the Boston Belting Co.; Nashville, Tennessee, 1,750 feet each to the B. F. Goodrich Co. and the Eureka Fire Hose Co.; Brownville, Pennsylvania, 500 feet to the Eureka Fire Hose Co.; Lincoln, Illinois, 1,000 feet to the New York Belting & Packing Co.; Elmira, New York, 600 feet to the Fabric Fire Hose Co. and 200 feet to the Bi-Lateral Fire Hose Co.; Carbondale, Pennsylvania, 1,500 feet to the C. C. C. Fire Hose Co.

A factory is soon to be erected at Hamilton, Ontario, and equipped with thoroughly up to date machinery for the manufacture of rubber goods. This factory will be operated by the National Rubber Co., Limited, to which a Canadian charter was recently granted. The officers of the new company, which is capitalized at \$500,000, are: C. S. Kilgour, president; F. E. Walker, vice-president; Dr. Geo. Wenig, secretary and treasurer. These officers, with C. L. Boyd and A. P. Ramsay, constitute the Board of Directors. The intention of the company is to manufacture tires and tubes at first, later branching out into other lines of rubber goods.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the month of March, 1914, and for the first nine months of five fiscal years, beginning July

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
March, 1914.....	\$210,112	\$79,005	\$684,679	\$973,796
July-February	1,569,872	832,571	4,757,876	7,160,319
Total, 1913-14.....	\$1,779,984	\$911,576	\$5,442,555	\$8,134,115
Total, 1912-13.....	1,966,639	1,178,268	6,194,003	9,338,910
Total, 1911-12.....	1,710,395	1,232,428	5,330,999	8,273,822
Total, 1910-11.....	1,511,975	1,801,977	4,485,644	7,799,596
Total, 1909-10.....	1,416,655	1,499,770	3,510,618	6,427,043

The above heading, "All Other Rubber," for the month of March, 1914, and for the nine months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
March, 1914.....	\$327,104	\$62,728	\$389,832
July-February	2,051,855	378,238	2,430,093
Total, 1913-14.....	\$2,378,959	\$440,966	\$2,819,925
Total, 1912-13.....	2,809,917	445,826	3,255,743
Total, 1911-12.....	1,869,471	393,920	2,263,391

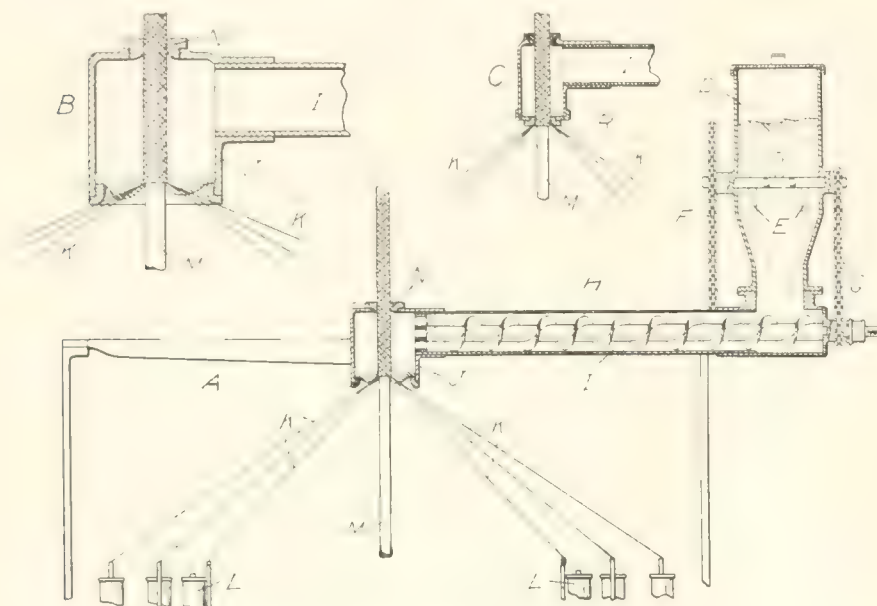
New Machines and Appliances.

COBB'S MACHINE FOR COATING WOVEN HOSE.

THE latest apparatus to be invented by Henry Z. Cobb, who has contributed so widely to the machines employed in rubber factories, and more especially to hose machinery, is a device for applying friction dough to hose directly above the braiding point. In this apparatus the rubber compound is applied so that the converging threads from the braiding machine enter the lower end of the coating cham-

ber movement tends to keep the dough in the cylinder and prevent it from falling through between the threads. The dough, however, gravitates sufficiently to pass down and cover the threads before they are braided around the hose.

The speed of the conveyor may be regulated so that enough dough is kept in the cylinder to maintain the lower surface of the dough just in contact with the threads as shown in the drawings. After being braided on the hose, the newly formed web passes up through the rubber and becomes thoroughly impregnated. The surplus dough is wiped off from the hose by a die *N* at the upper end of the cylinder. The modified form *C* of the coating cylinder has a die *R* at the lower end and with this form of cylinder the thread is braided over the hose before passing into the friction dough. Otherwise, this form of cylinder is the same as the other. [U. S. Patent 1,094,879, April 28, 1914, Henry Z. Cobb, Winchester, Massachusetts.]



COBB'S HOSE COVERING APPARATUS.

ber where they come into contact with the rubber. In this respect the machine differs from a former apparatus of Mr. Cobb's in which the hose was passed through the coating cylinder before the covering was braided on. The new apparatus has the advantage of passing the newly formed braided web through the plastic material so that the rubber penetrates the meshes of the woven cover.

Referring to the drawings herewith, *A* represents part of a braiding machine with the addition of the coating cylinder, conveyor and mixing cylinder. *B* represents an enlarged section of the coating cylinder, while *C* shows the cylinder in modified construction. Referring to the first of these drawings, the friction dough is placed in a cylinder *D*, in which it is kept stirred up by agitator blades *E*. The shaft of these stirring blades is revolved by a chain *F* passing over a sprocket on the end of the shaft and obtaining its motion from some convenient part of the braiding mechanism. The opposite end of the shaft carries another sprocket which actuates the chain *G*, this chain revolving a screw conveyor *H* in the cylinder *I*. This conveyor forces the dough into the coating cylinder *J*, which is open at its lower end. The threads *K* from bobbins *L* of the braiding machine converge at the lower end of the coating cylinder where they are braided on the core or hose lining *M*. As the threads are in constant motion their upward

A DECORTICATOR FOR LANDOLPHIA.

DECORTICATING machines of various types have been designed in the past for crushing vines for the subsequent removal of the gum. The two drawings in Figs. 1 and 2 herewith show respectively a side elevation and a cross section of a *Landolph* vine decorticator designed and recently patented by J. L. Palmer, of London, England.

The machine comprises a frame *A* in which are journaled a number of fluted rollers *B*, forming a traveling bed. Each roller carries a worm gear *C*, engaging a worm shaft *D*, by means of which all of the rollers may be rotated simultaneously in the same direction. Above the rollers *B* are two wheels, each made up of four rows of steel rods *E*, which act as hammers. The hammers are loose-

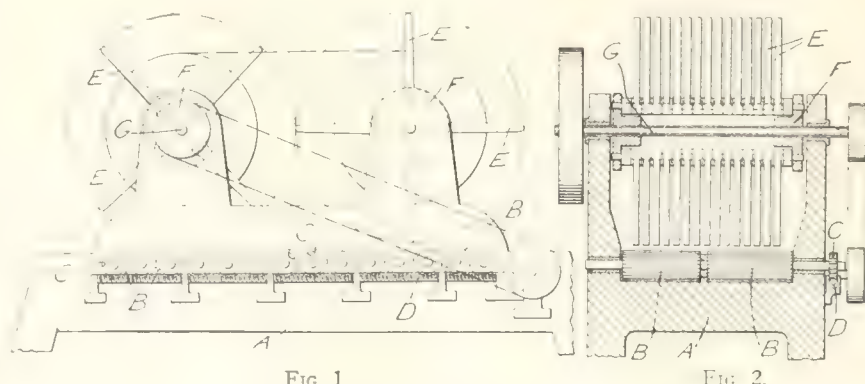


FIG. 1.

FIG. 2.

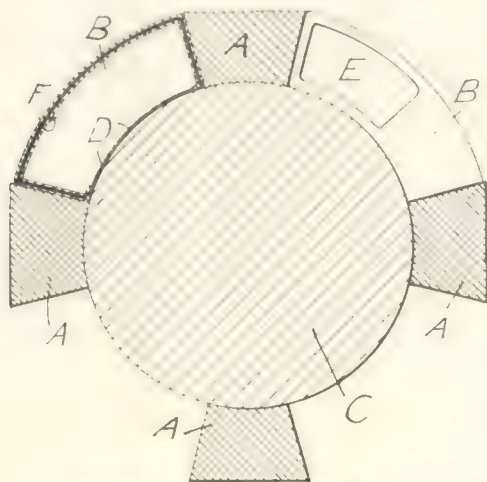
PALMER'S LANDOLPHIA DECORTICATING MACHINE.

ly pivoted in the hubs *F*. Their outer ends are toothed or grooved, and when in motion they just clear the bed of rollers *B*. The main shaft *G* is rotated at high speed, the centrifugal force of the revolving hammers keeping them extended. The vines are fed into the machine over the traveling

bed and as they pass under the rapidly revolving hammers the ends of the latter remove the bark by knocking it off in large or small pieces, or at least loosening it so that it is subsequently easily removed.

LUBRICATING BOX FOR CALENDER ROLLS.

THE accompanying drawing shows an end section of a calender roller equipped with a special form of lubricating device. The roller has mounted in connection with it the bearing blocks *A*, which are carried by the housings of the machine. The hollow boxes *B* are concentric with the roll neck *C* and are



DOOTSON'S CALENDER ROLL LUBRICATOR

placed in contact with it, at the same time resting upon the blocks *A*. The whole or a portion of the inner faces *D* of the boxes *B*, which are in contact with the roll neck *C*, is perforated and lined with wire gauze, through which solid lubricant is fed. When the gauze is of comparatively fine mesh the lubricant passes less readily to the surface of the roller, and thus the whole of the lubricant is fed in required quantity to the roller

by varying the mesh of the gauze. The boxes are filled with solid lubricant through openings *E*, which are covered by sliding doors. They are also provided with a lining of asbestos *F* to prevent the lubricant from melting too quickly. The practice of mounting a receptacle containing lubricant in contact with a revolving shaft is not new, but the feature of this lubricator is that the gauze comes in contact with the roller and lubricates it according to the size of the mesh. [Harold Dootson, Bullfield, Bolton, England.]

GIANT MAGNETIC COUPLINGS FOR RUBBER MILL.

IN the June number of THE INDIA RUBBER WORLD appeared an article illustrating and describing the Cutler-Hammer magnetic clutch and automatic safety brake, which has been installed in several rubber mills. The Woonsocket Rubber Co., of Woonsocket, Rhode Island, has recently installed in its plant five of these clutches, the largest magnetic couplings ever built. One is 72 inches in diameter, while the other four are each 68 inches in diameter. Their enormous holding power may be realized from the fact that the 72-inch size is capable of transmitting 44,600 pounds torque at one foot radius, or 849 horsepower at 100 r. p. m. The 68-inch couplings transmit 34,440 pounds torque at one foot radius, or 655 horsepower at 100 r. p. m.

The accompanying sketch shows diagrammatically the general arrangement of that part of the mill in which these couplings are installed. *A* represents a Rice & Sargent tandem compound, 20 x 40 x 60 steam engine running at 65 r. p. m. The large 72-inch coupling is shown at *B*, while *C* represents the safety brake, which is automatically applied to stop the mill the instant that the coupling circuit is broken. The construction and operation of these parts were explained in detail in the article referred to above. This coupling drives the mixer *D*. One of the 68-inch couplings is shown at *E*, driving the mixer *F*. This second coupling is driven from the engine shaft through gears *G*. At *H* is shown a Corliss tandem compound, 20 x 40 x 60 steam engine, running at 65 r. p. m. This engine drives three 68-inch couplings *I*, *J* and *K*, which drive respectively the calenders *L* and *M* and the refiner *N*.

The contract with the manufacturers of these magnetic coup-

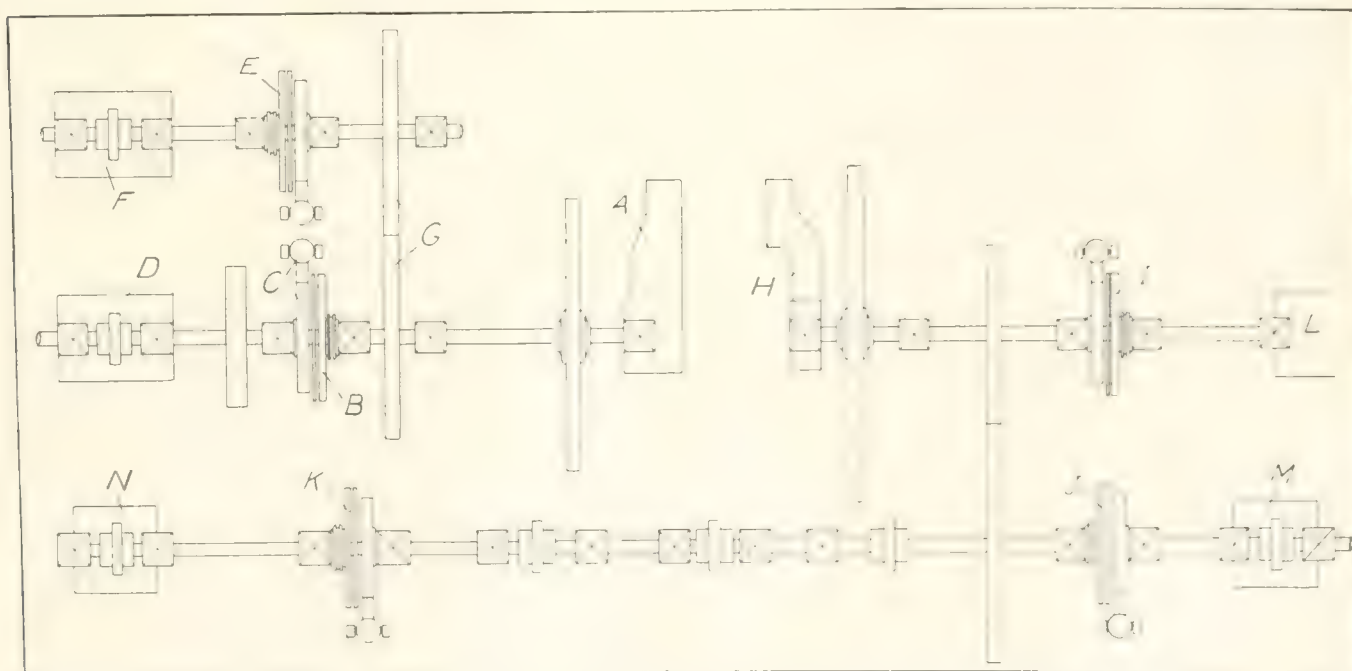


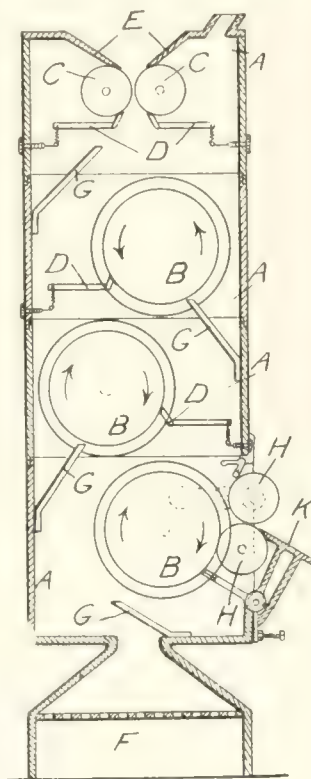
DIAGRAM SHOWING MAGNETIC CLUTCH AND SAFETY BRAKE INSTALLATION IN RUBBER MILL.

lings and safety brakes included a guarantee that, with one mill operating under load, the rolls must be brought to rest with a movement not to exceed 4 inches, after the operation of the safety switch.

NORZAGARAY'S COAGULATOR.

THE apparatus shown in the accompanying drawing was recently patented in England by L. Norzagaray, who has contributed to the rubber industry a number of machines, especially of the types used on the plantation. This machine is designed to rapidly coagulate all kinds of rubber latex and turn the product out in sheet form in one operation. It consists of a series of rectangular metal sections *A* placed one above the other. Each section contains a removable metal drum *B*, except the top one, which has a pair of laterally adjustable pressing rollers *C* and scrapers *D* mounted therein, immediately beneath the feeding hopper *E*. The metal sections *A* are placed over a fire place *F*. Smoke from the bottom chamber is guided by baffle plates *G* around that portion of each drum on which the latex is descending. The bottom section has a pair of corrugated pressing rollers *H* and a scraper (not shown in the drawing), which removes the rubber from the lower drum *B* and causes it to pass between the rollers *H*.

As soon as the smoke is dense enough the latex is poured into the hopper *E*. It runs down on rollers *C* and is removed by scrapers *D*, falling on the upper drum *B*. Here it is further smoked and then scraped off, falling on the next drum *B*. This is repeated until it is scraped off the lower drum and passed between rollers *H*. The resulting corrugated sheet of rubber is guided out of the coagulator by a chute *K*.



NORZAGARAY'S COAGULATOR.

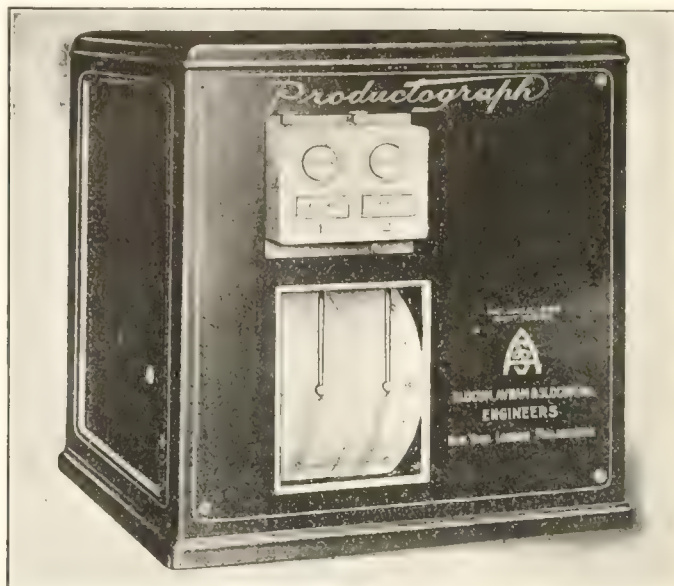
SAVED FROM LIGHTNING BY A RUBBER COAT.

There have been a good many authentic instances where men have been saved from the effect of lightning by being equipped with a pair of rubber boots, for a good pair of rubber boots or rubber shoes is effective insulation; and the New York papers recently cited the case of a worthy citizen of Goshen, New York, whose life was probably saved by the fact that he was wearing a rubber coat. During a severe thunder storm he was passing a church, the steeple of which was equipped with lightning rods. The steeple was struck and the lightning proceeded down the rods. The man was passing close by and received a considerable shock, being rendered unconscious for a time—but he was picked up and soon recovered. He attributes his escape from fatal result to his rubber coat. If he had been wearing a pair of rubber boots also the probability is he would hardly have felt the lightning. This, by the way, is not a bad talking point for retailers of rubber footwear and clothing, particularly where they can cite specific instances.

Replete with information for rubber manufacturers—Mr Pearson's "Crude Rubber and Compounding Ingredients."

THE PRODUCTOGRAPH.

ONE of the serious problems, if not the most serious, in general manufacturing industries is the inability to get absolutely accurate records of machinery operations. Dependence must be



placed on the reports of foremen and others which, being from human sources, are to an extent unreliable, and at times colored because of the very negligence of those that make them. The common method used to get a fair knowledge of the factory conditions is for the executive to make a periodical trip through the works. Such trips as a rule are made at stated hours of the day and every employe is on the *qui vive*. Machinery and men are alert and busy. There is a different story after the inspection tour.

A very definite solution of this problem is presented through a new electrical device now commercialized under the name of Productograph. This device is placed in the office of the executive and is operated electrically by the switch arrangement attached to the machines in the mill. The illustration herewith shows a two-needle machine.

The Productograph is usually placed in the private office of the owner or chief executive, where it shows at any moment of the day just what the machines in the factory are doing, and therefore any lax conditions that may be revealed can be corrected immediately. It shows the exact moment of starting of machines, stopping time, all stops during the day and their duration. It also shows rate of speed or production, with its variations. This is a most interesting feature because at certain hours of the forenoon and afternoon productivity reaches its highest rate. It is not constant during the working hours, nor is it equal between operators on like machines working under like conditions. The respective efficiency of machines and men is thus clearly shown by the Productograph charts. The instrument also counts the output, of whatever unit it may be.

The Productograph has been applied to many channels of industry and is adaptable to washers, mixers, calenders, spreaders, tubing machines, and tire wrapping machines. The makers claim that there is no machinery problem for which it is unfitted. As proof of its wide scope of usefulness, it is being installed at a dangerous railroad crossing, to record permanently the exact moment of lowering and raising of safety gates and ringing of alarm bell, while simultaneously charting the time of the train's passage over the crossing. This makes an indisputable record of value in possible litigation following upon casualties. (Slocum, Ayram & Slocum, Inc., Production Engineers, 30 Chambers street, New York.)

The India Rubber Trade in Great Britain.

By Geo. F. Ward, Correspondent

PAVEA SYNTHETIC RUBBER

THIS topic, which I referred to in my notes of May 1, continues to attract general attention. Financial and trade papers have expressed the opinion that it is the usual bogey which their readers can afford to ignore as of no importance. The facts, however, are against them, and there is no doubt that the samples sent out to the rubber manufacturers have had the effect of depressing the market for plantation rubber by at least 1d. per pound. I was informed by a raw rubber merchant in May that manufacturers would not follow their usual custom of buying two or three months ahead, as they preferred to wait for Pavea Synthetic Rubber, as it is termed. F. R. Muller & Co., of Liverpool, are the sole selling agents for Great Britain, and they have booked numerous orders for small trial lots as the result of past distribution of samples. These trial lots were to have been delivered in June or July, but I understand that it will be much nearer the end of the year before delivery can be made.

All sorts of rumors are extant as to the mode of making this rubber, the cost price of which is put as low as 4d. per pound and the selling price of which is fixed at 10 per cent below the market price of the day for first latex. Various vegetables and wild plants are mentioned as the source of the rubber. If, as stated, the output is to amount to 1,000 tons per week, it is evident that an enormous quantity of raw material will have to be handled. The process has been worked as a secret by Mr. Russell, the inventor, at the Brinscombe works near Gloucester, and it will continue to be worked as a secret process at the large new works near Manchester, all the officials having been sworn to secrecy and many of them being shareholders in the company, which is said to have a capital of £200,000. Some little comment having been aroused by a rumor that it is intended to make a public issue of shares before the manufacture has materialized, I may say that there is no intention of doing anything of the sort.

LEGAL CASE.

The trial brought by the Weber Rubber Co., of Manchester, against the Lancashire Revolving Heel Co., Limited, also of Manchester, was commenced before Justice Bray at the Manchester Assizes in May, but after the first day's hearing a private settlement was effected between the parties and the court proceedings were abandoned. I give herewith a brief summary of the case:

The Weber Rubber Co. made a large number of rubber heels in four qualities, priced at 1s. 2d., 1s. 4d., 1s. 5½d. and 1s. 6d. per pound, for the defendants, who posed to their customers abroad as manufacturers, though being in reality only merchants. At one period the plaintiffs' manager—now in the employ of the defendants—made a small allowance to settle a claim for defective deliveries. At a later date when the plaintiffs claimed payment for a large quantity of heels it was asserted by the defendants that numerous complaints had come from customers in Belgium, France and Italy and they sought to have the whole of the deliveries—amounting to many tons—charged at a job price of 8d. per pound. This the plaintiffs would not agree to, and action was brought for the amount due to them. The defendants then made a counter claim amounting to something like £400 for losses in cash, prestige, etc., on account of allowances made to customers and loss of trade. They stated that the goods were not up to the samples they had in their possession. As to

the returned goods, samples of these were shown to the plaintiffs for the first time in court. The plaintiffs' case was that the goods supplied were made of the same quality as the samples and, in the words of their counsel, they submitted that the claim generally was a fraudulent one. Owing to the counter claim the plaintiffs' counsel took advantage of his right to have the defendants' case opened first, and it was after the somewhat severe cross-examination of their manager, not yet concluded, that overtures were made for a settlement. The terms which were agreed upon two days later were as follows: The defendants pay £250 for the plaintiffs' claim and £125 for costs; they abandon the counter claim of £420 and in addition take the stock of two or three thousand heels at a price agreed on. With regard to the business in the cheaper rubber heels, which are largely made in England, the bulk of it is done on the continent.

TIRE FABRIC MANUFACTURE.

Some months ago I mentioned the registration of two private limited companies, called Tyre Yarns, Limited, and Tyre Fabrics, Limited. To recapitulate briefly, I may say that the main object of these concerns was to supply the Dunlop Rubber Co. with tire fabric, an agreement being made with the Dunlop company, which appoints one director of each concern, the other directors all being men well known in the Lancashire trade. A new mill is now in course of erection at Castleton, near Manchester, and such good progress has been made that it is anticipated that production will commence before the end of the year. The yarns and fabric will be made from Egyptian cotton, and with regard to the disposal of the output I understand that business will be done if desired with other tire manufacturers, under the stipulation that cloth woven according to the special specification of the Dunlop company is not supplied to other firms.

LAWN TENNIS.

This is proving quite a boom year for dealers in lawn tennis requisites and in the opening weeks of the season it was found impossible to supply the demand for balls. The reason seems to be that the "masses" as well as the "classes" are now taking to the game, facilities being afforded by the municipal authorities. Hard courts are also being put down in the public parks for winter play, so manufacturers of balls will find a demand all the year around. In the announcements issued to the press by the authorities of the Rubber Exhibition it is stated that a tennis court made of plantation rubber will be a feature at the Agricultural Hall and that the leading amateurs and professionals will disport themselves upon it. Reference also is made to the great popularity of tennis. This notice does not make it clear whether tennis, the old game played by very few people, is meant, or whether lawn tennis is what the court is for. I am, however, informed by the Leyland & Birmingham Rubber Co., Limited, who are making the court, that it is for lawn tennis.

THE VISCOSITY OF RUBBER SOLUTIONS.

This is a topic which has been discussed scientifically for some years, the view having been put forward that the viscosity of a rubber solution stands in intimate relationship with the quality and technical value of the rubber. Up to now, however, this form of laboratory procedure has not found any acceptance in trade circles. A recent paper on the subject by Mr. R. Gaunt, of the Imperial Institute, London, summarizes what has been done by others and the recent work of the author. Those interested will find it in the "Jour-

nal of the Society of Chemical Industry" of May 15. I refer briefly to some of the points established:

The viscosity of a rubber solution varies according to the particular solvent used. Fine Hard Pará after being washed for 45 minutes on the rollers lost a good deal of its viscosity, while *Castilloa* rubber subjected to the same conditions also lost viscosity, though not to the same extent. The author discusses the best method of graphically expressing the results obtained in viscosity tests, and among other subjects touched on is that of the effect of impurities in the solvent used, e. g., xylene in benzene. Such impurities are shown to affect the results, hence the necessity for employing pure solvents. A scientific dissertation leads up to the remark that it is difficult to obtain absolutely concordant results for the initial viscosities of solutions even of the same rubber and of the same concentration, unless one works under absolutely uniform conditions. All this and the absence of any claim on the part of the author that viscosity determinations are yet of technical importance indicate that in this matter we are very much where we were four years ago.

THE WEBER RUBBER CO., LIMITED.

As some little confusion may exist as to the identity of this firm, on account of the legal action reported in these notes and elsewhere, it seems advisable to clear things up. The Weber Rubber Co., Limited, is a firm formed a few months ago to take over the business of the Weber Rubber Co. (the plaintiffs in the action). The personnel and management are quite distinct, and it seems rather a pity that the new firm did not choose some other title. The Weber Rubber Co., Limited, whose works are in Weber street, Collyhurst, Manchester, makes a specialty of rubber heels, and the manager is Mr. Robert Flinn.

In this correspondence for May the position of Mr. E. S. Gray at the works of the Rubber Regenerating Co., Trafford Park, Manchester, was incorrectly given as under-manager whereas it should have been assistant in a particular capacity.

THE LONDON RUBBER SHOW OPENS AUSPICIOUSLY.

THE Fourth International Rubber Exhibition was opened in the Royal Agricultural Hall in London at 3 p. m. on June 24. The fact that Prince Arthur of Connaught was to

make the formal opening attracted a very large number of people, and it was found impossible to seat them all in the main hall. Many more were accommodated in the galleries, and yet it was impracticable to find room for all those who applied for tickets and desired to attend. After the opening exercises the Prince witnessed the first game of tennis ever



H. R. H. PRINCE ARTHUR OF CONNAUGHT.

played upon a rubber court, and showed himself a most interested spectator. Sir Henry Blake, president of the exhibition, held a reception which was attended by practically all the leading rubber people of London and many from all over the world.

Fifty-four different governments are taking part in this exhibition, the exhibits of Ceylon and Malaya being particularly fine. The Municipality of Pará has an attractive



SIR HENRY ARTHUR BLAKE, G.C.M.G.

President of the Exhibition.



MISS D. FULTON.

Secretary of the Exhibition.



A. STAINES MANDERS.

Managing Director of Exhibition.

display, which is also true of Amazonas, but the Federal Government of Brazil did not feel itself in a position at present to make any notable exhibit, which was a disappointment to those who recall the wonderful Brazilian contribution to the New York exposition in 1912. One feature which is attracting a great deal of attention is the rubber room equipped by the North British Rubber Co. The room is 15 x 20 feet and consists entirely of rubber. It has a rubber carpet, rubber wall paper, rubber tables and chairs, with rubber writing pads (the paper, however, is not rubber) and rubber ink stands and pen holders. This is hardly as elaborate as the wonderful rubber pavilions that Goodyear exhibited at the London and Paris exhibitions in 1851 and 1854, but suggests the notable Goodyear exhibit to those familiar with the history of the rubber industry and certainly to those people—probably very few in number—who may have seen those early displays of rubber possibilities.

The congress held in conjunction with the exhibition is proving extremely interesting, many of the large English manufacturers having agreed to let their experts attend and read papers or make addresses.

The day before the formal opening there was a luncheon given to the press, the menu of which was so highly exhilarating—though digestible probably only with men of long standing and much experience in the rubber trade—that it seems well worth reproducing. It runs as follows:

FOURTH INTERNATIONAL RUBBER EXHIBITION.

Patron: HIS MAJESTY THE KING.

ROYAL AGRICULTURAL HALL, LONDON, N.

PRESS LUNCHEON—23rd JUNE, 1914.

Hors d'Oeuvres

Pickled Rubber Seeds Amazon Pelles
Congo Sardines Java Paste
Deviled Herringbones

Soup

Mock Latex

Fish

Filletts of Sole in Funtumia Jelly
Castilloa Mayonnaise of Salmon
Lobster Salad—Hevea Dressing

Entree

Caoutchouc Lamb Cutlets

Cold Viands

Roast Beef and Coagulated Pará Braised Ox Tongue
Horseradish Indo-China Chicken and
Galantine of Amazon Veal Kuala Lumpur Ham
Wickham Hard Cure York Pressed Beef (free from
Ham tackiness)

Salad

Ceylon Tomatoes, Brazil Dressing
Green Salad (Pinto Process)
"Fine Hard" Potato Salad
Gum Elastica Beetroot

Sweets

Apple Tart and Rubber Milk Scrappy Mystery
Pneumatic Liqueur Jellies Petit Fours (vacuum dried)
Mani-hot Ice Pudding
Dividend Dates Stewed Synthetic Fruit
Malay Cheese Plantation Biscuits
Coffee Sao Paulo

The interest in the second day of the show was divided between wild and plantation rubber, the forenoon being known as "Brazilian Day" while in the afternoon a reception was held by the Straits rubber associations. On the afternoon of June 26 the Lord Mayor and the Sheriffs of London paid an official visit and looked over the exhibits with great interest. This was known as "British Malaya Day." June 27

was called "Belgian Day," the exposition being visited on that day by the Belgian Colonial Minister and the Belgian Minister to England.

The delegates to the exhibition permitted themselves a little relaxation on the 28th, being provided with a special Pullman train to take them to Brighton, where both breakfast and dinner were served at the Hotel Metropole. June 29 was "Ceylon Day," and a banquet was given by the French Commissioners. The Rubber Congress in connection with the exhibition held its opening session on June 30; and a reception was given by representatives of the French Government, the feature of the reception being the visit of the French Ambassador; while in the evening the Rubber Growers' Association, of London, held a reception.

On July 2, which will be known as "Soudan Day," there will be a reception by the Commissioners from the Soudan. On the evening of July 3 there will be a notable banquet, to be attended by practically all those taking any important part in the exhibition.

THE INDIA RUBBER WORLD is represented in a convenient place at the exhibition, where copies of the paper in liberal quantities are on sale, and all the publications issued from this office on exhibition. This exhibit is in charge of Mr. Edward F. Pfaff.

BRITISH EXPORTS OF RUBBER MANUFACTURES

	1911.	1912.	1913.	To April, 1913.	1914.
Waterproofed wearing apparel.	\$3,044,500	\$4,066,970	\$5,108,785	\$1,859,750	\$1,829,150
Value	789,085	668,825	690,715	192,425	213,570
Tires and tubes...	5,775,000	6,280,000	6,461,995	2,569,645	2,052,210
Cables insulated...	5,832,540	10,181,950	15,249,620	5,400,755	1,762,950
Other manufactures of rubber	9,291,500	8,884,260	8,282,870	2,792,290	2,523,215
Total value exports	\$24,732,625	\$30,082,005	\$35,793,985	\$12,814,865	\$8,381,095

In the city of Birmingham, England, 2,380 men and 1,072 women are employed as rubber workers.

BRITISH INVESTMENTS ABROAD.

In an analysis of the distribution of British capital among foreign investments, an English authority shows that the grand total is about 18 billion dollars, of which about one-half is in the British possessions, and one-half in foreign countries. As to the class of securities, about 5 billions are in government loans and 7 billions in railways, while the remaining 6 billions are in various forms of financial and industrial investments. This last-named amount includes the following items:

Iron, coal and steel.....	\$118,598,575
Nitrate	56,563,330
Oil	197,477,700
Rubber	199,438,000

Rubber thus seems to take the highest position among investments of its class, and to have almost twice as much capital engaged in its production as tea and coffee together.

MANDLEBERGS PAY 15 PER CENT.

The profits of J. Mandleberg & Co., Ltd., Manchester, for 1913, amounted to about \$300,000. A dividend of 15 per cent. has been declared upon the common stock; while the balance carried forward is equal to about \$110,000.

WILL OF THE LATE MR HEILBUT

Mr. Samuel Heilbut, of the firm of Heilbut, Simons & Co., rubber merchants, of London, who died in that city on April 3, left an estate valued at £767,157. After providing handsomely for his widow and various other members of his family, he left large bequests for a number of charitable institutions. Among these bequests were one of £15,000 to the Guildhall School of Music, for the establishment of the "Sam Heilbut" Scholarships; one of £5,000 to the Board of Guardians for the Relief of the Jewish Poor; several of £1,000 each to different hospitals—mostly Jewish—and a number ranging from £500 to £200 to different Jewish synagogues, homes and schools.

AN ENGLISH VIEW OF RECLAIMED RUBBER.

An estimate by W. F. de Bois Maclaren places the world's annual collections of old rubber goods at 400,000 tons and the total of scrap rubber at 280,000 tons. This quantity would yield 140,000 tons of recovered rubber compounds. On the basis of 40 per cent. of actual rubber in the compounds, the quantity of crude material they would displace would be only 56,000 tons.

Plantation rubber, it is urged, would suffer no more from the use by manufacturers of a certain quantity of reclaimed rubber than it now does from the 150,000 tons of mineral fillers used as loadings in the manufacture of rubber goods. "Why," it is asked, "should any one be alarmed if rubber manufacturers use less of mineral loadings and use recovered rubber compounds largely in place of them?"

TENNIS BALLS IN BRITISH TOURNAMENTS.

Announcement is made in an official journal that the Council of the British Lawn Tennis Association proposes annually to authorize such makes of balls as it is satisfied are suitable for use at open meetings, matches or other competitions. Manufacturers who desire to have their tennis balls authorized have been invited to make application to the secretary of the Lawn Tennis Association, enclosing with such application a list of tournaments, matches or competitions at which their make of ball has been used during the last two or three years. The number of makers thus authorized will not be definitely limited, though it must necessarily be restricted to the leading manufacturers. Having given the hallmark of authority to these makers, liberty of action to tournament and club committees will be given to choose the ball they may deem best among those officially sanctioned.

NEW RUBBER COMPANY AT LEICESTER.

The Leicester Rubber Company has been registered with a capital equaling \$100,000, to carry on the business of J. C. Burton and H. H. Burton in that city as manufacturers of thread, cord and tires.

RUBBER GROWERS' ASSOCIATION.

The council of the above association now includes about fifty members, the chairman being John McEwan, and the vice-chairman George Croll. Among the other members are: Sir John Anderson, Sir Edward Rosling, Sir Frank Swettenham, Sir William Treacher, as well as Arthur Lampard, Richard Magor, Noel Trotter and Herbert Wright.

LECTURES ON RUBBER IN LONDON.

A course of ten lectures on rubber has been organized by the London County Council. In taking the chair at the first lecture (by Mr. W. T. Gibson), Mr. Herbert Wright congratulated the council on the step taken, which he suggested might be repeated in Manchester, Edinburgh and other industrial centers, where there are notable rubber manufacturing and machinery firms. He added that he believed increased supplies of rubber would create improved demands for that product, especially if the public were brought to "think" rubber and take an intelligent interest in its uses and general advantages. It was, he considered, high time for the British government to stipulate for the use of plantation rubber when inviting public tenders for manufactured articles.

MOTORCYCLES FOR RURAL POSTMEN.

The British post office department is preparing to experiment in the use of motorcycles on rural delivery routes, starting with twenty machines having side car attachments. It is thought that in this way two deliveries a day can be made in country districts where only one is now possible. Motorcycle manufacturers predict that within a year the lower cost of upkeep will have led to the complete displacement of the horse by the motorcycle in the postal service of the United Kingdom.

BRITISH CONSULAR REPORT ON TRADE OF PARÁ.

A BRITISH Consular Report, recently published, deals with the trade of Pará for the years 1910-12 and part of 1913. Though its contents are in great part of a general character, they deal specially in various points with rubber. The report emanates from Consul G. B. Michell.

Pará, as it is well known, is of capital importance as a receiving and distributing center for northern Brazil. Until the rubber boom of 1909-10, the collection and export of rubber was only one of the industries of Pará, but the inflation which resulted led to the practical abandonment of every other activity, all minds being absorbed by rubber. The panic caused by the fall in the price of rubber is a matter of trade history. Most of the money gained during the days of great rubber profits was taken to Europe. Some was invested there, but very little remained in Brazil.

PARÁ IMPORTS.

The oversea imports into Pará reached the following quantities: 1911—283,613 tons; 1912—275,383 tons; 1913—221,000 tons. Of these quantities coal represented: 1911—154,045 tons; 1912—154,810 tons; 1913—125,000 tons.

A comparison of the imports of other goods from various countries shows the following:

From—	1911.	1912.	To Oct. 31, 1913.
United Kingdom tons	32,229	21,953	23,000
United States	26,012	32,708	24,000
Portugal	17,718	16,862	14,000
Germany	17,188	15,222	13,700

Portugal sends to Brazil, principally, wine, onions, olive oil, brandy, preserved provisions, fresh fruit and vegetables.

PARÁ RUBBER RECEIPTS.

A comparative table of entries of rubber from the Amazon Valley into Pará shows:

From—	1911.	1912.	To Oct. 31, 1913.
State of Pará tons	9,049	7,072	5,243
State of Amazonas	11	80	....
State of Matto Grosso.....	61	125	112
Acre	6,209	8,291	6,358
Bolivia	2,390	2,758	3,170
Total	17,720	18,326	14,883

MANAOS EXPORTS.

The quantities of rubber exported from Manaus, of all grades, were: In 1911—20,187 tons; 1912—18,690 tons.

CAUSES OF DEPRESSION.

Among the causes assigned by Consul Michell for the present conditions at Pará and Manaus are: (1) Eastern competition; (2) Corner in Europe; (3) High sea and river freights; (4) High cost of living and consequently of production.

COST OF PRODUCTION.

While rubber costs the original gatherer nothing, being wild, and the appliances used primitive, it has to supply an expensive living to many hands before reaching the consumer. Advances to the rubber gatherer carry various burdens, to cover the credit and other risks. Another item of cost is constituted by the fact that the state government requires all rubber to be packed in boxes of a certain size, the wood for which is imported from the United States, although the Amazon district contains vast forests.

The report includes many interesting tables, which, though mainly affecting Pará, cast a side light upon Brazilian conditions in general.

The Olympia Automobile Show, London, will take place this year, November 6 to 14.

THE RUBBER TRADE ASSOCIATION OF LONDON

Since its inception in 1913, the following changes have taken place in the official staff of the above association: Edward Berg has succeeded Samuel Figgis as chairman; Andrew Devitt has replaced Harry Symington as vice-chairman. In most other respects the list published in THE INDIA RUBBER WORLD of July 1, 1913 (page 537) still holds good. New features are the appointment of a London panel of 40 arbitrators and of a Liverpool "Quality Panel" of 6 members. William G. Briggs retains the office of secretary.

The rules from which an extract was published have been modified in certain instances, the changes having come into force March 1, 1914. These alterations chiefly refer to delivery, weights and default in deliveries.

ACETONE FROM NATAL.

Efforts are being made in England to induce the British War Office to use the acetone manufactured from Natal wattle wood in place of that from Bosnian beech. The latter gives acetone of 78 per cent. purity, while the Natal article gives an 80 per cent. quality and could be supplied at the same price as the above-named lower grade. Acetone is a solvent for rubber resins and is used in rubber extraction and in the analysis of rubber.

TECHNICAL PROGRESS AFFECTING RUBBER DURING 1913.

Two reviews have lately dealt with the above subject. One is by Dr. Wurm, of Berlin, and the other from the pen of Dr. Friedrich Arndt, of Birmingham. Among the experiments of Professor Harries, referred to in the former, are those dealing with the influence of halogen upon rubber, the experimenter finding that the hydro-halogenides of the various kinds of rubber are very similar.

With respect to vulcanization, most experts are agreed that there is a firm chemical combination, and not a mere absorption of the sulphur. Stern and Bernstein have treated this matter in detail, the former endeavoring to isolate certain combinations.

DIRECT DEFINITION OF RUBBER.

Considerable trouble was taken last year in seeking a practical method for the defining of the substance of rubber. According to Dr. Wurm's views, one reason of the difficulty attending such a definition is that we are insufficiently acquainted with the dimensions of the rubber molecule and therefore cannot draw up any exact formula. Owing to the diverse compositions of the various kinds of rubber, differences must occur in the products of reaction; the quantity of bromine absorbed largely depending on the concentration, temperature and length of exposure. Yet new forms of calculation are constantly being introduced. The definition of the substance of rubber can be much more accurately effected indirectly by the determination of all other components.

ARTIFICIAL RUBBER.

During last year many new methods for producing artificial rubber were published and patented. The opinion is expressed that artificial rubber has no chance of even partially conquering the market in the near future. Dr. Wurm adds that the cost of manufacture of synthetic rubber is high and the quality so poor that it cannot stand comparison with even the lowest grade of natural rubber.

ALBUMEN.

Dr. Arndt states that the part occupied by albumen in crude rubber has been, during last year, the subject of much investigation. The co-efficient of vulcanization seems to be higher the larger the proportion of albumen present. Latex, immediately after the tapping, is of a weak alkaline character, but soon becomes acid. It is not difficult, it is added, to make artificial latex of isoprene and albumen and then to coagulate

it by acid and by exposure to the air (the carbonic acid in which perhaps leads to coagulation), or by salts, as in the Colosseus process. It is a question what acid and what process are best as substitutes for self-coagulation.

MEETING OF GERMAN RUBBER MANUFACTURERS' ASSOCIATION.

In his presidential address at the recent meeting of German rubber manufacturers, Kommerzienrat Hoff called attention to the fact that the reduction in price in the principal articles of the rubber industry is greater than any economy effected through the lower price of rubber. He predicted that unless a change took place the results of 1914 would be more unsatisfactory than those of 1913.

Other speakers confirmed these views, pointing out the importance of reliable price calculations and urging that manufacturers should not hesitate to refuse unprofitable business, even when presented under alluring conditions. No order should be executed without its calculations being strictly verified.

Another point urged was that it would be unwise to base prices on any reductions in the quotations of rubber without taking into account the fact that general expenses and the cost of manufacture are constantly increasing.

In view of the expiration within a few years of existing commercial treaties with various foreign countries, the question of new treaties of that character was referred to as a point of importance for deliberation.

Another subject dealt with was the division of the rubber industry into groups, each with its president. In cases of necessity the members belonging to the group could be convoked for the discussion of important matters. In this way the development of the industry would be facilitated for the general benefit.

RUBBER IN LOCOMOTIVE BUILDING.

A German paper speaking of the use of mechanical rubber products in the construction of locomotives in Europe says that it is much larger than is generally known. A visit to a locomotive factory will show an unlooked for consumption of rubber and asbestos packing and insulating material. Hose takes a prominent position in the form of tender and coupling hose, brake and heating hose, as well as that for the conduct of water and gas. Both smooth and spiral kinds are used, with thick and thin sides, and of standard dimensions. Smaller locomotives and those for narrow-gage lines of course require smaller sizes of hose in their mechanical equipment.

An interesting feature of locomotive manufacture is the fact that specially large engines are required in North America, Argentina and Spain. In Europe coupling and heating hose is usually about 2½ inches internal and 3½ inches external diameter, with spirals far apart. The various pressures to be withstood call for differences in the mode of construction.

Besides hose, packing rings of rubber and asbestos, as well as asbestos slabs and loose flanges, are used. Asbestos cushions serve to isolate steam, particularly superheated steam, in the cylinders and pipe connections.

Many articles, particularly in rubber, are largely used in the manufacture of passenger and freight locomotives and tenders. In these lines, the car builders carry large and fully assorted stock, such as do makers of mechanical rubber goods.

RECONSTRUCTION OF METZELER & CO., MUNICH.

A statement of the receiver in the case of Metzeler & Co., Munich, shows that a strong syndicate is being formed by the German banks interested, with a view to the reconstruction of the above concern under guarantees.

GERMAN RUBBER EXPORT STATISTICS FOR 1913.

ACCORDING to the official German statistics for 1912 and 1913 (converted into American equivalents), the following are the principal features of rubber goods exports:

GERMAN RUBBER GOODS EXPORTED.

	1912		1913	
	Tons.	Value.	Tons.	Value.
Soft rubber goods...	16,934	\$27,224,250	18,393	\$29,090,750
Hard rubber goods...	1,342	2,903,500	1,313	2,980,250
Treated with rubber.	612	1,223,250	804	1,698,500

Total 18,888 \$31,351,000 20,510 \$33,769,500
Manufactures of soft rubber thus form about 90 per cent. in quantity of the German rubber goods exported.

The total German exports for 1913 of rubber goods, exceeding 20,000 tons, included the following articles:

	Tons. About	Principal Outlets.
1. Motor Vehicle Tires.....	3,000	France 20 per cent., Great Britain 18 per cent.
2. Rubber combined with fabric	4,000	Great Britain 45 per cent.
3. Rubber hose not elsewhere specified	1,600	Great Britain 13 per cent., Austria 12 per cent., Argentina 12 per cent., Italy 10 per cent.
4. Textile goods combined with rubber thread and rubber thread combined with textiles or not.....	1,600	Great Britain 60 per cent.
5. Bicycle tires	1,200	Netherlands 27 per cent., Denmark 22 per cent., Great Britain 20 per cent.
6. Non-motor vehicle tires	800	Great Britain 30 per cent.
7. Rubber tubes for tires of other than power vehicles	400	Netherlands 25 per cent., Great Britain 22 per cent.
8. Rubber tubes for use in tires of power vehicles.	230	Great Britain 30 per cent., Argentina 15 per cent.
9. Soft rubber paste and rolled sheets, etc.....	1,000	France 40 per cent., Austria 20 per cent.
10. Driving belts of fabric with rubber	1,000	Great Britain 35 per cent.
11. Steam packings, etc....	4,500	
Others articles	1,180	

Total of principal articles 20,510 tons.

The separate German exports of hard rubber goods are shown for 1913 as 1,313 tons. Of this quantity, about 20 per cent. went to Great Britain and 12½ per cent. to France. This figure shows a slight reduction from that of 1,342 tons recorded for 1912.

In the above table only the largest outlets are shown.

GERMAN RUBBER TRADE IN 1913.

The annual report of the Berlin Chamber of Commerce for 1913 states that the German tire manufacturers have had reason to complain of the operation of the guarantee system as applied to automobile and bicycle pneumatic tires; while inquiry has been on an increased scale for solid tires for motor trucks, autobuses and electric cabs. The requirements as to guarantee of the omnibus companies, the largest consumers of solid tires, are, however, such that manufacturers' profits have been cut down.

Business in mechanical rubber goods during the first nine months of the year was satisfactory, in consequence of the large purchases by the railways, navy and shipbuilding yards. Trade during the last three months of the year fell off to such an extent as to cause reduced working hours in the factories specially devoted to mechanical products.

In rubber shoes business was unsatisfactory during the greater part of the year, but the heavy snowfall in the latter part of December gave dealers an opportunity of clearing their stocks, with the result of a fairly satisfactory total for the year's trade.

Export business showed in some cases an increase, particularly in hose for mechanical purposes. Reduced exports were, however, recorded for bicycle tires, belting, rubber shoes and for nearly all kinds of hard rubber goods.

Owing to the depression marking the last quarter of the year, the number of unemployed rubber workmen at the close of 1913 was larger than is usual at that period.

In waste rubber the year was disappointing, chiefly owing to the large quantities of crude rubber which came on the market. The absence of the normal American demand for old shoes was one of the causes of the depression which existed. The increased number of hospitals led to a development in the trade for medical supplies.

GERMANY'S COMMERCE.

Consul General Robert P. Skinner of Berlin has reported the provisional results of the German trading returns for the last two years. A comparison of the figures for 1912 and 1913 shows that in the latter year the combined total of imports and exports was about 6 per cent. in excess of those of 1912. The actual figures are:

	1912.	1913.
Imports	\$2,544,549,868	\$2,545,505,676
Exports	2,131,718,400	2,399,184,228
Total	\$4,676,268,268	\$4,944,689,904

The following are the figures more directly referring to rubber:

	1912.	1913.
Crude rubber total exports.....tons	4,943	3,971
Crude rubber exports to the United States.....	2,671	2,001
Imports of India rubber goods.....	4,441	4,191
Exports of India rubber goods.....	18,276	19,708

BAYER COMPANY TRANSFERS LIBRARY.

The "Farbenfabriken" (formerly Friedr. Bayer & Co.), of Elberfeld, is removing its Bureau of Information to the factory at Leverkusen, at which town the "Kekulé" library will also be located. Both sections will be under the direction of Dr. Gartschlaeger.

NEW DIRECTOR GENERAL OF EXCELSIOR WORKS.

Herr Siercke, hitherto director of the Excelsior Rubber Works, Hanover, has been promoted to the office of Director General, vacated through the death of the late Kommerzienrat Heise.

Some Rubber Interests in Europe.

THE FOREIGN COMMERCE OF FRANCE.

BOTH in quantity and value the total foreign commerce of France for 1913 broke all previous records. The imports equaled \$1,642,117,000, as compared with \$1,588,553,000 in 1912; while the exports represented the equivalent of \$1,326,950,000, against \$1,295,528,000 in the previous year. Thus the grand combined trading totals for the two years were respectively, \$2,884,081,000 and \$2,969,067,000.

The analysis by Consul General A. M. Thackara, of Paris, of the results for 1913, shows that the United Kingdom heads the list of countries exporting to France, with about 14 per cent., Germany coming next with 13 per cent., while the United States takes third place with 10½ per cent. The United Kingdom also takes the highest place in exports from France, with 21 per cent., Belgium following with 16 per cent., Germany with 13 per cent., and Algeria with 8 per cent.; the United States taking fifth place with 6½ per cent.

The following results are shown by the report as to rubber:

	1912	1913
Crude rubber, imports.....tons	19,111	17,440
Crude rubber, exports.....	12,674	10,687
Imports of rubber manufactures.....	3,617	3,348
Exports of rubber manufactures.....	6,123	6,930
Crude rubber exports to the United States	3,626	2,183
Crude rubber imports from the United States	\$1,375,125	\$1,370,493

INCORPORATION OF A FRENCH RUBBER MANUFACTURING COMPANY.

It is reported that the firm of Hirtz, Michel-Levy & Bloch, of Paris, manufacturers of rubber goods, contemplate incorporation under the style of the "Dynamic" company. They will still continue to make pneumatic tires, air chambers and tires for heavy loads at their Paris factory.

THE NETHERLANDS A GOOD MARKET FOR RAINCOATS.

Vice Consul Dirk P. DeYoung, stationed at Amsterdam, reports that the climate of the Netherlands necessitates the frequent use of waterproof garments and that while Great Britain and Germany have in the past supplied the demand for such articles, none of which are manufactured in that country, American concerns have recently met with success in their introduction and sale. He states that purchases are made largely through selling agents, who operate on a 3 to 5 per cent. basis; that there are no department stores in the Netherlands, but that clothing concerns are fairly numerous in the larger cities. A list of the clothing stores and selling agents in Amsterdam may be obtained from the Bureau of Foreign and Domestic Commerce, Washington.

NEW DUTCH CABLE WORKS.

A company has been incorporated at the Hague for the purpose of erecting a factory at Delft, 10 miles from Rotterdam, to manufacture underground electric cables of high, as well as low, voltage. The capital equals \$800,000, of which about one-third has been issued. It is anticipated that the product will at first represent \$450,000 a year, but may be increased later on. It will be the only factory of its kind in Holland, all cables having now to be imported.

NEW RUBBER SHOE FACTORY IN SWEDEN.

A new company has been formed at Vienna for the purpose of establishing a rubber shoe factory at Helsingborg, Sweden, under the style of "Tretorn." The capital is about \$40,000.

TIRES AT THE BALTIC EXHIBITION

Details of the Baltic Exhibition at Malmö, Sweden, show that 80 per cent. of the tires on motor vehicles are "Continental," while the remaining 20 per cent. are distributed among four other makes. Both pneumatic and solid tires are represented.

TIRES AT THE COPENHAGEN EXPOSITION.

Out of 205 mounted pneumatic tires exhibited at the recent Copenhagen exhibition, 120 were of the Dunlop make, while the remainder were distributed among 16 other makes.

DANISH EXPORT OF SCRAP RUBBER TO AMERICA.

According to consular returns, the value of scrap rubber exported to the United States from Denmark was in 1912, \$11,632, and in 1913, \$30,527.

AVIATION IN RUSSIA.

Russian aviation in 1913 was notably successful; the number of dirigible airships being now fourteen, including a Russian one built at the government factory of Ishora near St. Petersburg. Besides this factory, two other large concerns are building airships, the trials of which are said to have given encouraging results. The most important flight for 1914 will be that from St. Petersburg to Sebastopol, the distance of about 1,200 miles being increased through deviation to about 1,500 miles. The time allowed by the donor of the prize is only 24 hours.

RUSSIAN IMPORTS OF AUTOMOBILES

Statistics indicate that while in 1901 Russia imported only 40 automobiles, value \$21,150, the imports of 1912 amounted to 2,880 cars, value about 5 million dollars; in addition to 575 frames, representing about \$300,000.

PORTUGUESE MOTOR CAR IMPORTS.

Portuguese imports of motor cars and trucks increased from 286 in 1911, valued at \$212,000, to 522 in 1912, valued at \$353,000. Carriage builders have now commenced to build the chassis in Portugal, importing the accessory parts.

AUSTRALIA'S IMPORTS OF RUBBER GOODS.

The imports of manufactured rubber goods into Australia, as recorded by Consul General John F. Bray, show a value of \$4,723,744 for 1912 and \$4,971,563 for 1913.

TWENTY YEARS' FLUCTUATIONS IN RUBBER

An interesting wall table has been issued by the Credit Colonial & Commercial of Antwerp, which has continued the former business of Messrs. L. & W. Van de Velde of that city. Quoting a few of the figures, it will be seen that the world's production of rubber has grown from 32,418 tons in 1894 to 112,170 tons in 1913, while consumption has increased from 31,131 tons to 104,255 tons. The graphic chart which accompanies the statistics illustrates the fluctuations between 1s. 9d. (42.57 cents) in 1913 and 12s. 4½d. (\$3.01) in 1910. During the 20 years referred to, Antwerp importations have risen from a yearly quantity of 275 tons in 1894 to 5,040 tons in 1913, while the total for Europe has increased from 21,479 tons to 78,544 tons. United States imports for the same time show an advance from 14,643 tons to 51,480 tons.

NEW AUSTRIAN ELASTIC GOODS MANUFACTURERS.

A firm under the style of Teubner, Preck & Co. has been formed at Vienna, as a branch of the firm of the same name at Grottau, Bohemia, manufacturers of elastic narrow goods.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE AKERS MISSION (*Requiescat in Pace.*)

By the author of "The Eastern Method."

THE readers of THE INDIA RUBBER WORLD will recall the predictions made by this correspondent as to the fate that awaited the Akers Mission to the Amazons. Unfortunately for those responsible for its creation, the so-called Akers Mission is dead, as dead as can be.

But the many curious incidents which occurred during the development of the said mission; the extravagant ideas which brought it into being; the mystery which surrounded its economic backing, and other issues, are occurrences which, in my opinion, greatly interest the rubber community, and I feel it my duty to place them before your readers.

It is said that Mr. Percival Farquhar, in his endeavors to find the practical salvation of the large capital invested in the Madeira-Mamoré railway and the Pará Port Works, conceived the idea of introducing into the Amazons the Eastern methods of tapping and preparing rubber, so as to increase the output of rubber fivefold without extra cost of production.

No sooner did he do this than it was communicated to the Booths—the concern which has exploited the transatlantic mercantile marine portion of the Amazon's trade for the last three scores of years. Suarez Hermanos—also interested in the river traffic of the Amazons, by virtue of having acquired a portion of the capital of the Amazon River Navigation Co.—were also approached on the subject, and the pact was formed. Mr. Farquhar was to furnish the genius and leading spirit of the undertaking; the Messrs. Booth were to furnish an expert on East Indian rubber planting, whilst the Suarez were to furnish experts on Amazon rubber exploitation.

Having settled the matter on this basis, the question arose as to who should put up the money. Well, for a time these several enterprises were sold as the great benefactors who were generously doing all of this for the Amazons; until it turned out very publicly that the Brazilian treasury had supplied the funds to carry out the would-be philanthropic intentions of the group. Not that the Brazilian Government was at all confident of the results of the said mission; quite the contrary. But because the Minister of Agriculture of Brazil had made up his mind not to allow his department to be unjustly accused of short-sightedness or meanness of any sort in any project for benefiting the rubber industry of the Amazons.

According to this arrangement, therefore, the Messrs. Booth selected Mr. C. E. Akers to fill the post of expert in the Eastern rubber plantation industry. Right here it should be said that Mr. Akers has been favorably known to the literary world as the writer of the "History of South America," and as correspondent of "The Times," in Chili and Peru. Next in order came Mr. F. Lugones, who had also successfully managed rubber *seringacs* in Bolivia belonging to the firm of Suarez Hermanos. Then came a Mr. Ufenast, whose rubber knowledge is about equal to that of Mr. Lugones.

The Government of the State of Pará was also invited to participate in the works of the mission, and the late Dr. J. Huber was commissioned to go as far as the East—wherever the Akers Mission went. But Dr. Huber only accepted the commission on the condition that he should report his views entirely by himself and to his Government alone. Hence the very able and comprehensive report rendered by him to the Governor of Pará on his return from the East.

Those who know the Amazons and read Mr. Akers' report could not but feel sceptical as to his knowledge of rubber even to a slight degree, for here was a so-called expert who came forward as a champion of the overhead system of tapping when practical experience has shown to us in the Amazons the disastrous results of such practice. Then here was the same champion trying to convince the Amazonian contingent that a much greater quantity of rubber could be produced, for the

same cost for labor, if the Eastern method—the herringbone system—were adopted, and if a gouge were used instead of the classic Para chisel or *machadinha*.

Fortunately for the Amazons, there were people in the Madeira River country who volunteered to place some of their *seringacs* at the disposal of Mr. Akers and his Mahometan assistants. And, as good care was taken to work with native tappers, and by native methods, one *estrada* for each one handed over to Mr. Akers, under perfectly equal conditions, it was soon proven, beyond the doubt of even Mr. Akers, that by his method the trees yielded larger quantities at first but very soon began to show signs of exhaustion; and in less than three months it was proven that, whilst the latex gathered by tapping after the East Indian method was greater in quantity, the dry rubber was considerably less than that obtained per tree by the native tappers after the native method of extraction and smoking over burnt nuts and palms.

It was enough. Mr. Akers made himself quite scarce. It is reported he had a row with Mr. Farquhar, and the latter requested the Federal Government to rescind the contract to carry out further experiments in the Upper Amazons. But the Federal Government had already paid the sum of 1,000 contos—\$333,333.00, and is the loser by that much. But what a lot of experience it has gained. And how many columns of abuse it has escaped just for allowing itself to be duped into one of the most disastrous attempts ever made to prove that *cheese can be made of chalk*!

But let us stop here and not trample upon the fallen. The Akers Mission is dead—may it rest in peace! And may Brazil be delivered from another such philanthropic outburst on the part of historical writers, aided and abetted by company promoters.

Verily, Mr. Akers should now write the history of the whole occurrence and acknowledge that the Amazon has nothing to learn from the East whilst the East could take many leaves out of its books and be the happier and safer for the extra knowledge.

Pará, Brazil, May 25, 1914.

X. C. J.

WHAT SICILY WANTS IN RUBBER.

Sicily offers a fair field to manufacturers of rubber goods, especially in hose suitable for use by wine distillers. The preferred type is that having a flexible, spiral metal cover, and of this variety 60 per cent. of the quantity in use is of Italian manufacture, and 40 per cent. foreign. The American spiral nickel-armored hose is considered superior to the Italian hose of the same type, which rusts easily. Hose ½-inch to 2 inches in diameter is sold in 50-foot coils though dealers would prefer lengths of 100 feet, which involve less waste when retailed in pieces of 2 to 5 feet. American hose is purchased through London supply houses, the government duty being 80 lire per 100 kilos (\$7 per 100 pounds). There being no difference in price between Italian and foreign makes, and American goods being preferred, there seems no reason why American manufacturers should not secure a large proportion of the Sicilian trade.

Rubber tubing for conducting gas, etc., is supplied in part by Italian manufacturers and in part by Germany. It is delivered, including duty, for 5 to 20 lire per kilo (44c. to \$1.75 per pound), according to quality and size.

The most popular tires in this market are of French, German and Italian makes, and Russian and Austrian rubber shoes have the preference, on account of their weight and durability, though American shoes are quite popular because of their lightness and superior finish. The duty on rubber shoes is 1.25 lire (24c.) per pair, and cardboard boxes should not be used in packing as this increases the duty about 2c. per pair, an additional assessment being levied on posters or other advertising matter of .75 lire per kilo (6.57c. per pound).

Some Rubber Planting Notes.

TECHNOLOGICAL STUDY OF CONGO RUBBERS

IN a communication to the "Bulletin" of the French Colonial Office, Messrs. C. Cheneveau and F. Heim report on two samples of Congo rubber which they had recently examined.

One of them, *Funtumia elastica* from the Oubangui district, was found when slightly vulcanized to be less tenacious, less "nervy" and less elastic, but softer and more extensible than fine Pará hard cure, coming nearer to Pará soft cure. If it was vulcanized to a further degree, which increased its nervosity and elasticity, it seemed to be more nearly equal to Pará hard cure.

The other sample was of a so-called "pounded" rubber sent by M. Baudon, colonial administrator, who described it as having been extracted by pounding from the roots of dwarf varieties of *Landolphia ovariensis*. Its technical qualities corresponded with those found in vine rubbers.

After slight vulcanization, it was much softer than fine Pará hard cure—very extensible, but less tenacious, "nervy" and elastic. Vulcanization with a higher proportion of sulphur caused it to gain in elasticity and nervosity.

Compared with *Landolphia ovariensis* from West Africa, collected by M. Yves Henry, under the same conditions of vulcanization, it became a little softer, but also a little less "nervy" and elastic.

TRIALS OF MANURING RUBBER.

The German Colonial Office has issued a report of the experiments in manuring carried out in the German African colonies in 1912 and 1913, as well as of those in contemplation for 1914. A broad distinction is made between "one-year cultures" and "permanent cultures." In the former group are included: cotton, maize and potatoes, as well as six other vegetables and cereals; the second comprising rubber, coffee, cocoa, cocoa palms and sisal. "Permanent cultures" require a longer time for experiments of manuring than those with yearly crops.

Experiments have been principally carried out with *Manihot Glaziovii* trees; measurements of girth and results of tapping having been recorded for plantations at Kange, Neusagan, Mwule, Massowien, Longusa and Tanga.

Following up previous trials, an experiment was lately carried out at the Kwagundo plantation of Captain Adler in German East Africa, where the soil is dark and rather heavy. The forest was cleared in 1912 and rubber trees were planted at distances of 13 x 16 feet. Manuring commenced on May 15, 1913. The trees are now said to be thriving.

CEYLON'S COMMERCE FOR PAST TWO YEARS.

According to the report of Consul Charles K. Moser of Colombo, the imports of the island grew from \$32,728,512 in 1903 to \$56,874,774 in 1912 and the exports in the same period from \$32,722,733 to \$61,938,553.

Comparing the exports of rubber for 1912 and 1913 the following results are shown:

	1912.	1913.
United Kingdom .....pounds	8,176,523	15,841,126
United States	4,833,085	6,417,236
Belgium	1,315,208	4,214,730
Other countries	676,169	1,560,247
Total	15,001,075	28,033,345

While the larger quantities went to the three more important markets the group of "other countries" showed an advance on the average of about 120 per cent. The general advance represented about 90 per cent.

SAPUMALKANDE RUBBER CO., LTD. (CEYLON).

The total production of rubber in 1913 was 324,160 pounds against 241,324 pounds secured in 1912. Inclusive cost of production in 1913 was 1s. 4.02d. (32.44 cents) per pound; the net price realized being 2s. 5.28 d. (59.31 cents) per pound. Some 133 acres hitherto under tea and rubber are new under rubber alone. For 1914 the crop estimate is 400,000 pounds.

RUBBER FREIGHTS FROM THE EAST.

In commenting on the recent course of the crude rubber market, the "Ceylon Observer" urges the need of correcting the great disparity at present existing between rubber and tea freights. The latter article from Calcutta pays 30 shillings or \$7.30 per 50 cubic feet, while rubber has to bear a rate of about 60 shillings or \$14.59.

FEDERATED MALAY STATES RUBBER EXPORTS.

According to a cablegram from the government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of May amounted to 2,069 tons, as compared with 1,225 tons in the corresponding month last year, and 2,151 tons in April last.

Appended are the comparative statistics for 1912 and 1913:

	1912.	1913.	1914.
January .....tons	1,218	2,131	2,542
February	1,212	1,757	2,364
March	1,379	1,737	2,418
April	1,020	1,626	2,151
May	1,007	1,225	2,069
Total	5,836	8,476	11,544

AMERICAN COMPANIES IN MALAYA.

According to the reports issued by the Waterhouse Co., Ltd., of Honolulu, of the Tanjong Olok plantation and the Pahang Rubber Co., both these concerns are in a satisfactory condition with good prospects. The secretary and treasurer of the two companies, Messrs. A. and F. T. P. Waterhouse, both visited Malaya during 1913 and the above reports have thus a personal character.

With regard to the first of these companies, the manager's estimate for 1914, based on the first four months, is 210,000 pounds. The output of 124,100 pounds for 1913 having been considered unsatisfactory, a change in organization was made.

ANGLO-MALAY RUBBER CO., LTD. FEDERATED MALAY STATES.

Returns for 1913 show an output of 1,346,008 pounds against 943,491 for 1912; obtained from an average area of 3,019 acres. The inclusive cost of production was 1s. 3.16d. (32.79 cents) per pound, and the average gross price realized 2s. 9.42d. (67.36 cents) per pound. Two new washing mills were installed during 1913 in the Batang Kali factory.

HARPENDEN (SELANGOR) RUBBER CO.

Production in 1913 was 392,136 pounds, against 307,414 in 1912. The inclusive cost price was 1s. 3.37d. (30.16 cents) per pound and the selling price 3s. .06d. (73.10 cents) per pound.

It is reported that a machine is now being constructed for a rubber company in West Africa for the purpose of flying over the forests of that region and locating rubber trees.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

RUBBER NOTES FROM SINGAPORE.

By Our Special Correspondent

SINCE the publication of my last letter, in the January issue of THE INDIA RUBBER WORLD, figures have become available which change the feeling of speculation in regard to the future position of wild rubber to one of almost absolute certainty. The year 1913 saw the end of the domination of wild rubber—some 60,000 tons against 47,700 tons of plantation—and marked its entrance upon a subordinate position in annual crop statistics. This year, 1914, will see wild rubber falling off in quantity, while the plantation output is likely to be not less than 60,000 tons, and may even reach 70,000 tons in the event of high prices, which might tempt the opening up of areas not really matured sufficiently for otherwise profitable results. For the last ten years the supplies of assorted wild rubbers have been between 60,000 and 70,000 tons per year. This year the probabilities point to only 45,000 tons, and for 1915, with plantation rubber at an average price of 2s., thereby taking the place of the cheap rubber of the past, there is every prospect of the supply of wild rubber not exceeding 30,000 tons. With no known economy can any but the very best Fine Hard Pará from the most easily accessible regions be produced at a competitive price, and the inferior rubbers will have been mostly weeded out altogether. In fact I venture to think that 30,000 tons of wild rubber for 1915, with 2s. plantation, is altogether too optimistic.

There is a small temporary shortage in rubber in sight for the present year, as the consumption is almost bound to be more than the estimated production of 110,000 tons, for at the present low prices, manufacturers seeing ahead the certainty of continued cheap rubber will be able to formulate plans for enlarged consumption through new and extended uses of raw rubber. There is not the slightest fear of a temporary rise in price creating increased supplies of wild rubber, the fact of cheap prices having come to stay being too well known for encouragement to be given to the organization of wild rubber enterprises. There will always be a certain amount of wild rubber collected by natives of the producing countries at trifling cost and sold for what it will bring, but a few thousand pounds a year will cover this, as long as it will pay the freight. Much wild rubber was bought in Africa at 1s. a pound in the old days, and this will probably be done again on a small scale, unless manufacturers throw out such rubber in favor of the standard, constant purity of plantation rubber.

The 47,700 tons of plantation rubber produced in 1913 were obtained from about 450,000 acres only of the 1,500,000-odd acres planted in the Middle East. This is nearly all rubber planted up to 1908, with a small quantity of 1909 rubber brought in under the high price in early 1913. There are, roughly, 150,000 acres more planted in 1909 which will be in bearing this year and which will produce probably 4,000 or 5,000 pounds during the latter half of the year. There were some 300,000 acres planted in 1910, which will be in bearing by the end of 1915; 400,000 acres in 1911, bearing in 1916, and 200,000 acres in 1912, bearing by the end of 1917. These are merely rough figures, but they suffice to show to what extent the years will bring their increase. The maximum production will not exceed 400 pounds per acre, and it is probable that the average in full bearing will be nearer 300 pounds per year.

There is not the slightest doubt that Fine Hard Pará will always command a market, but it is equally certain that within the present year Malaya will be turning out large quantities of smoke-cured rubber made like Fine Hard but of greater purity. This rubber will be absolutely standardized and can be produced by thousands of tons as soon as consumers show any desire for it. Machines are now being made which will turn out 1,000 pounds of smoke-cured rubber per day, worked by three coolies, the rubber being produced direct from the latex by smoke coagulation without the use of acid or other adulterations. By this and other methods and the establishment here of a buying agency, manufacturers could have rubber made to suit their requirements for shipment direct to themselves within a few days' time. Such a

buying agency, with a capital of \$5,000,000, would be able to handle 30,000 tons a year—basing this calculation on an average price of 2s. for rubber and on New York payments, which are usually on ninety days, so that the financial resources of the company must be sufficient to take care of a three months' supply. Of this capital probably only about \$2,000,000 would be required at the start, as the banks carry up to 70 per cent. on bill of lading, with approved credit, at 6 per cent. Such an investment, beside affecting a material saving to the consumer, would probably earn attractive dividends. The purchases would be made on contract here at fixed rates and the quality would be uniform and guaranteed, all the rubber being re-packed except such as came from estates which had earned confidence. Cheap freights and direct shipments would also tend to reduce first cost to the consumer without robbing the producer.

Consumers having awakened to the possibilities afforded by direct shipments of rubber made to their order—which would mean a considerable reduction in the London office profits of the plantation companies—the resulting situation will probably be most beneficial to the stockholders of such companies, as drastic reforms in estate management, with material increase in efficiency as well as decrease in cost of production, must take place. Some of the company reports now coming to hand show a degree of caution in striking contrast to reports issued in the past.

The rubber industry in the colony is controlled almost entirely by non-resident directors, many of whom have never even seen a rubber tree and would hardly know rubber if they saw it. It stands to reason, therefore, that their knowledge of the management of estates—some of which are larger than the city of New York, containing four or five, and even up to ten square miles of planted rubber—is very limited, most of the agencies with whom the executive administration is vested having power of attorney to act for them. The local agents are usually merchants, accountants, financial agents, etc., not planters, so that they find it necessary to employ a visiting agent as a go-between. This man is usually an old planter, not infrequently a man of only moderate attainments who has passed his usefulness as an active planter and who has a lot of fine old crusted beliefs, living entirely in the past and combating every innovation.

These men are usually extremely intolerant of any scientific knowledge and of new discoveries and methods; and the unfortunate part of it is that they are generally able to impress these views upon the agents, who knew them as successful planters in the old days. One of the unfailing weaknesses of the visiting agents has been to write glowing and optimistic reports on the companies over which they have control; but now that the development of unproductive areas can no longer be given as an excuse for failure to pay interim dividends—there being no undeveloped areas left, to speak of—not only will the office of visiting agent probably be dispensed with, but the estate manager will be obliged to bring himself up to date in methods, etc. He must in the future be a technical expert—a specialist in the manufacture of raw rubber as well as a planter; versed in up-keep of land, roads, drains, plant diseases, etc. The great need of the colony is for technical experts in the making and producing of rubber itself. There are not many people here yet who have any knowledge of this subject on modern lines, but the few so equipped are making a reputation for themselves and are commencing to influence the prosperity of individual estates.

The opinions expressed in the past by promoters of rubber producing companies in Sumatra, that they would not only be able to bring their rubber into bearing at very much cheaper rates than in Malaya, but at a cost of some 3d. under the cost here, have not been borne out by the actual results. Quite a number of our rubber estates here—none of which have any secondary crops to share the expense of land up-keep and administration—have produced their rubber at an f. o. b. cost of 1s., and several at 9d. to 10d., during the last year; which, considering that the average area in bearing is still not more than one-half, and

the bulk of the tapped area still in its first or second year of bearing, should be considered very creditable. Costs in Sumatra are always quoted in guilders (40 cents gold) against costs in Malaya in Straits dollars (56 cents gold). Enormous new tracts of land have been opened up in Sumatra—at least 700,000 acres in the last ten years. Practically all of this extension has taken place where there are neither roads nor railroads, and these are now having to be built, entailing increasing expenses to the Government of the Dutch Indies and the necessity for enforcement of a drastic income tax, which it is said is to be still further heavily increased. This tax is only now being felt by the companies, whose estates have not heretofore been productive or earning any income. Moreover, the land in Sumatra is not owned by the plantation companies, being leased from the Government by registered Dutch companies only, and for a term of seventy-five years, at a rental averaging about 1 guilder (40 cents gold) per acre per year, beginning at about one-half of this amount and taking five years to reach the maximum. This is a condition which is hardly likely to tempt large investments of capital.

I hear that renewed interest is being taken by American cocoanut oil consumers in cocoanut planting. May I be permitted to endorse the word of warning issued by the British Government against fraudulent and unduly speculative concerns out here. Cocoanuts can no longer be planted cheaply, as in the past, as shown in an article which appeared about the middle of March last in the London "Financier," which gave the real cost of cocoanut planting. There are very few cocoanut estates owned by Europeans in the Middle East, and none of any importance are for sale. The bulk of the cocoanuts planted in the Middle East are owned by native squatters in small patches, who have no transferable titles; and any attempt to sell a cocoanut estate should have the fullest investigation.

STRAITS SETTLEMENTS RUBBER EXPORTS.

A cable received by the Malay States Information Agency from the Colonial Secretary, Singapore, states that the export of plantation rubber during the month of May amounted to 1,309 tons, as compared with 1,548 tons in April last and 814 tons in the corresponding month last year.

The total export to the end of May is 7,026 tons against 4,001 tons for the first five months of last year.

The following table gives the comparison, month by month, for three years:

	1912.	1913.	1914.
January .....tons	253	784	1,181
February	274	743	1,703
March	427	898	1,285
April	387	762	1,548
May	431	814	1,309
Total	1,772	4,001	7,026

These figures include transshipments of rubber from various places in the neighborhood of the Straits Settlements, such as Borneo, Java, Sumatra and the non-Federated Malay States, as well as rubber actually exported from the Colony, but do not include rubber exports from the Federated Malay States.

IMPORTS OF MOTOR VEHICLES TO STRAITS SETTLEMENTS.

According to a German Consular Report, the imports of bicycles, motor vehicles and parts represented in 1912, \$1,947,000, against \$1,438,000 in the previous year.

RUBBER FROM THE EUPHORBIA TIRUCALLI.

This tree grows in most of the valleys of Natal, within forty or fifty miles of the coast; its latex being said to contain from 12 to 15 per cent. of rubber and an average of 74 per cent. of resin. When extracted the rubber is reported to be worth 80 per cent. of the price of Pará rubber.

CAPITAL INVESTMENTS IN RUBBER IN NETHERLANDS EAST INDIES.

The subjoined table reproduces in American currency the figures quoted in the "Exhibition Guide Book," showing the distribution of investments.

	Java.	Sumatra.	Riouw.	Borneo.	Total.
British	\$4,100,000	\$9,230,680		\$600,000	\$14,326,760
.....	28,200,200	23,078,800	\$1,642,520	4,288,720	57,210,240
.....		3,112,000	200,000		5,288,000
German	460,000				498,400
.....		74,200			74,200
.....		6,000,000	400,000		6,400,000
Total	\$40,373,080	\$41,534,080	\$2,242,520	\$4,888,720	\$89,038,400

AREA OF CULTIVATED RUBBER IN THE DUTCH EAST INDIES.

The subjoined table shows a total of 462,510 acres under rubber cultivation in Dutch East India, of which 442,192 are in private hands and 20,318 belong to the government. This area is distributed as follows:

	Java.	Other islands.	Total.
Private ownership .....acres	217,696	224,496	442,192
Government ownership	19,502	816	20,318
Total	237,198	225,312	462,510

PLANTATION COMPANIES IN 1914

Returns from 17 companies in the Straits, Java and Sumatra show the following aggregates for January, 1914, as compared with January, 1913: Straits, 9 companies, 702,343 pounds against 560,257 pounds; Java, 4 companies, 241,097 pounds against 157,670; Sumatra, 4 companies, 1,320,459 pounds against 667,733 pounds.

Taken in separate groups the rate of increase is: Straits, 25 per cent.; Java, 53 per cent.; Sumatra, 97 per cent.

NETHERLANDS RUBBER FREIGHTS.

Complaints have been made by the Amsterdam Rubber Trade Association because of the heavy freight charges of the steamship companies running from Netherlands India to Europe and from the Netherlands to the United States. The high cost of transportation to America via Holland is encouraging the movement for a direct service.

The reduction of 11s. (\$2.68) per ton on rubber from the Straits Settlements to London (effected through the action of the Rubber Growers' Association) is quoted in support of the movement for a reduction in the freight from Netherlands-India.

According to the report of the Soekaboemi Agricultural Association, the rubber production of Java for 1913 is estimated at 3,000 tons, against 1,500 tons for 1912.

The list of prizes to be awarded at the Batavia Rubber Exhibition to be held next September is constantly growing. In addition to the large solid silver cup offered by Mr. Pearson, the editor of THE INDIA RUBBER WORLD, for the best system of extracting gutta-percha, a cup will be offered by the Executive Committee of the Congress for the best collective rubber exhibit. Prizes will also be offered by the Rubber Growers' Association of Malaya, "Grenier's Rubber News," and by a number of individuals, for excellence in various departments of rubber growing and manufacture.

Exports of rubber from British North Borneo in 1912 amounted in value to \$545,703, a gain of \$298,293 over those of the previous year; while exports of gutta percha dropped from a value of \$6,580 in 1911 to \$4,246 in 1912.

There are now in Cochin China 29,600 acres planted in rubber, with about 4,000,000 trees, and it is estimated that by 1920 the annual production will have reached 4,000 tons.

PRESENT AND FUTURE AMAZONIA.

by Dr. Severino Silva, President.

IN a recent lecture delivered in Para, Dr. Severino Silva commented on the fact that in the Amazon country during the years of its prosperity attention was paid almost exclusively to the gathering of rubber, everything else being practically neglected. Through a desire to get the largest quantity of rubber in the shortest time, many trees were tapped without regard to their future usefulness and thus were ruined, although the *Hevea brasiliensis*, which gives an abundance of latex and requires fewer incisions, was somewhat exempt from the ruthless methods pursued with other trees.

The lecturer went on to discuss the high cost of living and of prosecuting any industry in that country owing to the extravagant habits of even the poorer classes, habits contracted during the days of abnormally large earnings. He stated that northern Brazil had but a rudimentary knowledge of agriculture. He thought, however, that this condition could be altered by securing the proper sort of immigration, with a view to the ultimate fusion and absorption of such colonists.

THE PRESIDENT'S MESSAGE.

According to the latest annual message of the President of Brazil, the railroad system of this country was increased by 1,600 miles during the past year, bringing the total mileage of the Republic up to 16,000. There was a falling off during the year of \$55,000,000 in the value of coffee and rubber exports, due not so much to decreased quantities as to lower prices. The President stated that a revision of the customs tariff was in preparation. One interesting feature of his message was his expression of thanks to the United States for the reception accorded last summer to Dr. Lauro Müller, Minister of Foreign Affairs, when he paid you a visit of several weeks.

THE BRAZILIAN PRESIDENT-ELECT.

In November next, Dr. Wenceslao Braz will succeed Marshal Hermes da Fonseca, whose four years' term as President of Brazil will then expire. In his early days Dr. Braz took the degree of Doctor of Laws; being elected a member of the legislature of Minas Geraes, in which state he held the office of Home Secretary from 1899 to 1902. From 1906 to 1909 he was Governor of the state, and was subsequently elected vice-president of the Republic for the quadrennial period from November 15, 1910, to November 15, 1914, when he will assume the office of President. It is expected that Dr. Braz, now 45, will show himself capable of dealing with the special financial difficulties now confronting the government of Brazil. He has proved an energetic and independent administrator, commanding the confidence of the nation.

COLONEL ROOSEVELT AT PARA.

Colonel Roosevelt landed at Para on the morning of May 7, being received by Dr. Enéas Martins, Governor of the state; Senhor Dionysio Bentes, intendant of Belem; United States Consul Pickerell, and other officials. The party drove through the most attractive parts of the city to the residence of Governor Martins, where a band was stationed which played American and Brazilian national anthems, and where the Colonel's formal reception took place. In conversation he alluded to the many waterfalls in the country as sources of energy and exercising an influence upon the future of Brazilian industry, adding: "It is for capitals like Manaus and Para to develop this influence. . . But Amazonia ought to cultivate other products besides rubber."

With regards to Rio, he said it had three elements of a large city: cleanliness, good lighting and good municipal regulations. These, he said, are unequalled in the world. As to Para he was surprised to see in the equatorial zone such a clean and attractive city.

Colonel Roosevelt and those who had taken part in his reception, were the guests at lunch of Governor Martins, being joined by the presidents of the Senate and Chamber of Deputies as well as other officials. The Colonel re-embarked early in the afternoon.

DR. PINTO ESTABLISHES PARA OFFICE.

Dr. Carlos de Cerqueira Pinto announces that he has contracted with the government of Brazil for the introduction of his patent process for the preparation of *Hevea* and Cauchorubber without smoking, the only process which reduces the cost of production. In accordance with this contract, he has established his laboratory, warehouse and office at No. 48, rua 13 de Mayo. All the materials necessary for those who wish to make rubber according to his process will be found at his above address.

MADAME HUBER GOES TO EUROPE.

Madame Sophia Müller Huber, widow of the late Dr. Jacques Huber, accompanied by her children, left Para for Europe early in May. Dr. Enéas Martins, governor of the state of Para, went to the steamer to take leave of her. She intends to reside at Schaffhausen, Switzerland.

ILLNESS OF TWO BRAZILIAN FEDERAL MINISTERS.

Recent advices from Rio mentioned that Dr. Lauro Müller, Minister of Foreign Affairs, and Dr. Edwiges de Queiroz, Minister of Agriculture, were both still indisposed.

SHIPPING "MENDES FINE."

Last August, J. Marques, the rubber exporter of Pará, shipped to New York some trial cases of rubber in sheets prepared by the Mendes process (which was described on page 346 of the April issue of THE INDIA RUBBER WORLD), some of this rubber being Acre rubber and some of it Islands. These samples were sold at a premium of 10 cents per pound, and the shrinkage was reported as 4 per cent. for the Islands against the usual 14 to 16 per cent., and 2½ per cent. for the Acre rubber as against the usual 4 per cent.

PORTRAITS OF LATE DR. HUBER.

Before her recent departure for Switzerland, Madame Sophia Huber presented to Dr. Ignacio Moura, of Pará, a portrait of her late husband, with an appropriate inscription. The Permanent Commission of the Economical Defense of Amazonia intends to place a reproduction of this portrait in its headquarters.

Señhor Adolpho Ducke, head of the botanical division of the Museu Goeldi, has been provisionally entrusted with the direction of that establishment.

NEW BRAZILIAN PROCESS OF LATEX COAGULATION.

Señhor Conrado Ramos Bastos lately exhibited at the Pará Commercial Association various qualities of rubber prepared by a process of his invention. This method consists in the coagulation of the latex and the preparation of the sheets without the use of chemicals of any kind.

The "Folha do Norte," of Pará, reports a demonstration held at its offices, which showed that rubber prepared by the system referred to was free from impurities and possessed the needful elasticity, having apparently passed through a refining process. The local authorities and the chief members of the rubber trade attended the exhibition of the results obtained by the new process.

PRESIDENT-ELECT ON BRAZILIAN PRODUCTS.

In the course of an interview, Dr. Wenceslao Braz, the president-elect of Brazil, lately reviewed the condition of the chief national products. He attached special importance to the development of cotton and articles of food. Cacao, he also suggested, was admirably adapted for the north of Brazil; that part of the country being particularly affected by the recent fall in rubber, while the world's consumption of cacao is constantly increasing. He further urged the importance of immigration, which he considered was most valuable when spontaneous or under the auspices of settlers already located in the country. The wonderful progress of the United States in attracting immigrants he attributed to the American educational system.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent

THE RAILWAY POSITION OF THE BALATA INDUSTRY

THE Secretary of State for the colonies has replied to the governor's despatch asking for an Imperial loan for the construction of a railway to the hinterland of this colony, together with a grant in aid of any deficit that may occur during the first five years the railway is running. The Secretary of State agrees that the resources of British Guiana are rich, but points out that any scheme of development that is proposed should show a satisfactory prospect of recouping the expenditure incurred upon it within a reasonable period. The scheme submitted by the governor does not, in his opinion, conform with economic principles. The scheme submitted must be self-supporting at an early stage, and must not be such as to make any appeal to the Imperial Government for a grant in aid of revenue. The Secretary of State, therefore, asks the governor to frame a scheme which it will be possible for the colony to finance out of its receipts and out of the general increase of prosperity created by the scheme. In the event, however, of the Imperial Government granting a loan for the construction of the railway, the Secretary of State makes it quite clear that the constitution will have to be so modified as to give the Imperial Government full control over the colony's revenue and expenditure.

It has been decided in the colony to proceed with the idea of the railway and to endeavor to secure a loan from the Imperial Government on the most favorable terms possible. It has been suggested that as the conditions will be harder for the colony to meet than would have been the case under the Governor's scheme, and as the gold and balata industries stand to benefit most by the enterprise, they should submit to slightly increased taxation. Representatives of the balata interests in the colony do not look upon the suggestion with favor. In view, however, of the great saving balata companies will effect upon their expeditions by means of the railway, the suggestion is worth their consideration. The following letter by the Attorney General, illustrates the enormous disadvantages under which the balata industry now suffers on account of the lack of adequate means of communication: "When I spoke at the Railway Committee yesterday of the cost of the present journey of balata bleeders to and from the Rupununi as amounting to £30 to £40 per head I meant the total economic cost to the industry, not the actual out-of-pocket expenses of the employer. The employer loses much in money outlay for boats and boat-hands and in the efficiency of his men. The laborer loses months of time in actual journeys and in delays and is out of pocket for months of expensive food, every mouthful of which has to be carried from Georgetown. There is also to be considered the loss of balata and the occasional abandonment of expeditions costing thousands of dollars."

THE RUBBER INDUSTRY—LATEST STATISTICS.

At a meeting of the Board of Agriculture, held recently, the governor, Sir Walter Egerton, who presided, said that since Mr. Bancroft, the Assistant Director of Science and Agriculture, had been in the colony he had demonstrated that Pará rubber would grow as well here as in the Malay Peninsula and Eastern countries. Pará rubber was not a gold mine but was still a very profitable speculation. It was stated at this meeting that in future the colony would depend very little upon outside supplies of seeds. There were now in the Botanic Gardens 200,000 seedling plants and in order to encourage purchasers the price has been reduced from five cents each to two cents each. Since the last census of production was taken in the colony the area under rubber has increased by 859 acres and it is now 4,018 acres. There has been a steady increase during the past seven years.

THE RUBBER EXHIBITION. THE COLONY'S EXHIBIT

The colony is not going to make the same mistake this year that it made in 1912, when, by a curious series of blunders, it abstained from securing representation at the New York Rubber Exhibition. For the Rubber and Allied Trades Exhibition that is being held in London this year excellent exhibits of rubber, balata, sugar, rice, cacao, coffee, cocoanuts, casava starch, arrowroot, timber, etc., have been despatched. The rubber and balata exhibits include the following:

Rubber: Issorora station, biscuits 120 pounds, scrap 10 pounds; Onderneeming Farm, biscuits 38¾ pounds; Plantation Tushen, biscuits 6 pounds; Plantation Leonora, biscuits 7½ pounds; Plantation Providence, biscuits 7 pounds; the Hills Plantation, biscuits 15 pounds; Plantation Noitgedacht, biscuits 15 pounds, sheet 26 pounds.

Balata: Consolidated Rubber and Balata Estates, 400 pounds; Consolidated Rubber and Balata Estates, 30 pounds; Department of Lands and Mines, 112 pounds; Board of Agriculture, 25 pounds.

Sapium rubber: Consolidated Rubber and Balata Estates, 120 pounds.

This decision to exhibit in London is regarded as a wise one, for it is still felt that the abstention from the New York Exhibition was a great mistake.

NOTES FROM DUTCH GUIANA.

By Our Regular Correspondent

AT the time of writing, Dutch Guiana is passing through an unusually wet period. The rains are falling almost continuously, with but very short intervals of sunshine. The balata bleeders are taking advantage of the favorable weather, and are all reaping a big harvest of latex. One bleeder alone reports having stored 200 barrels of milk awaiting fair weather to dry his production. Unlike rubber, balata cannot be satisfactorily dried without some sunshine, and too much rain is as bad as no rain for the balata business.

This year will undoubtedly break all records of production, for 145,225 kilos. (319,495 lbs.) had been exported to the United States and Europe by the end of April. The production for the month of April alone stands at 50,341 kilos. (110,750 lbs.).

The new regulations to which reference has been made in previous correspondence are still the topic of the day and continue to cause a good deal of friction in the balata gathering industry. It is said that the Colonial States will not pass the bill, but the Home Government will certainly take a different view of the situation and adopt the new ordinance in spite of whatever the local parliament may say or do, for the new regulations are well suited to Dutch Guiana, where capital is so badly needed.

The man of modest means will be obliged to work for the capitalist on his terms or get out of the business altogether. Formerly, the little man could take a small concession from the government or work a piece of private land on which balata trees grew, and pay a small royalty to the owners; but under the new regulations, unless he can put up a large amount of money and take in concession an extensive tract of land, he must drop out of the business. This is the principal bone of contention among the moderate capitalists in the colony.

The new regulations will greatly tend to lessen fraud among the bleeders and others who formerly did not hesitate to help themselves to their employers' property, especially when they found themselves heavily indebted. Not only was the government swindled out of revenues, but the concerns operating on a large scale were badly "done." All this will be stopped under the new regulations.

Our neighbors in Cayenne, or French Guiana, have at last awakened to the fact that their colony possesses a very valuable asset in the form of latex trees of rubber, cacao, balata, etc.

old the people of that colony would touch nothing in the "bush" line except gold, and in consequence had no desire to tamper with balata; with the exception of a few isolated instances, where the work was carried on by negroes from British Guiana. The French have made large profits in gold digging, and it was hard to persuade them to go in for anything else. Many of these French creoles became very rich from placer washings by hand process; the precious metal being freely distributed throughout that portion of South America and the mining laws so favorable that the inducements were too tempting not to be taken advantage of. In consequence every man and almost every woman was a gold digger.

The Mini creek, a tributary of the Maroni river, on the French shore produced alone in five years about \$25,000,000 in dust and nuggets, and this was nothing in comparison with the wealth taken out of the Carsewenne district—now annexed to Brazil—in the early nineties. These placer diggings were discovered under peculiar circumstances. The story is an exceedingly interesting one but can be given here only briefly: An old halfbreed Indian confided to a friend of his, a young French fisherman, that he had made a great gold discovery at a point on the Carsewenne river, a twelve days' trip from Cayenne. The fisherman doubted the tale but passed it on to a negro prospector, who got the old halfbreed to accompany him and took a trip to the spot indicated. He brought back to Cayenne a bag of sand which being assayed proved to have 500 ounces of pure gold. The authorities, being sure he had stolen it from some mine, put him in jail, but no mine owner appearing to claim the gold he was finally released. A second trip netted him 5,000 ounces of gold, and on the third trip, so goes the story, he and a companion made \$200,000 each.

Is it any wonder, then, that the French people have never turned their attention to any other industry?

But most of the placers are worked out at the present time, and the French are turning to some other enterprise. The balata business opens to them unusual opportunities for making money quickly on their investments. The balata forests are accessible, the laws governing the industry are simple and millions of acres can be had for the asking.

The Government exacts a small tax per kilogram on the produce when brought in for export, but there are no restrictions as to methods of tapping. Under the circumstances it is natural to suppose that French Guiana will become a very lucrative field for the bleeders and others of modest means; and already there is an exodus to that colony, where men experienced in that line are in great demand.

One hears very little talk of the rubber industry at the present time. The very low market price of the article would appear to have chilled in a great measure the enthusiasm displayed by the growers, who some time ago had great hopes that the industry would be a lasting and highly remunerative one. The present prevailing low market prices have caused the planters to suspend operations on the trees and thus give them a chance to develop, with the hope that at some future time the prices of rubber will increase.

It is gratifying to record that the Javanese women and some of the men on the plantations have rapidly acquired proficiency in the accepted methods of tapping; and, when the markets are tempting, Dutch Guiana rubber will be produced in large quantities. The action of the rubber growers in playing a waiting game is highly commendable. It must not be forgotten, however, that the planters have not to depend on the rubber produced to meet current expenses. Cocoa, coffee and other products are grown to great advantage and profit, and in consequence the planters who have areas cultivated with rubber are quite independent of the state of the rubber market.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

BALATA IN DUTCH AND BRITISH GUIANA.

A French account states that after 20 years' existence the balata industry of Surinam seems to be losing ground. The trees are spread over a large area; the lack of the needed attention being the cause of their diminution. Regulations have been introduced with a view to the prevention of their destruction. Returns of exports show 892 tons for 1910; 1,145 tons for 1911 and 727 tons for 1912. This reduction is attributed to the fall in the price of rubber, in conjunction with the destruction of the balata trees.

COMMERCE AND INDUSTRIES OF TRINIDAD AND TOBAGO.

According to a report from Consul Andrew J. McConnico of Trinidad, the imports for consumption in 1912 were \$12,306,809, against \$13,400,154 for 1911. The exports include balata gum \$22,182 for 1911 and \$28,732 for 1912. Total exports were \$23,210,704 for 1911 and \$21,765,795 for 1912.

Later information gives the total shipments of rubber from January 1 to May 31, 1914, as 3,785 pounds, against exports for the corresponding periods of 1913 and 1912 of 1,505 and 1,725 pounds respectively.

Trinidad being one of the chief shipping ports of the West Indies, a bright future is confidently predicted for it with the opening of the Panama canal.

The cultivation of rubber was continued during 1913 and the yield showed an increase, but was not up to expectations, owing to the adverse weather conditions.

CUBAN PURCHASES OF RUBBER GOODS.

Cuban imports of rubber goods for 1912 included waterproof cloths, \$277,500, of which amount \$150,000 were received from the United States; \$82,500 from the United Kingdom; \$12,250 from Italy, and \$10,000 from Spain. Rubber hose and other manufactures of rubber came from the United States to the amount of \$110,000.

REDUCTION IN MEXICAN RUBBER SHIPMENTS.

Statistics of Mexican exports from July to December, 1913, as compared with the corresponding period of 1912, show: Guayule \$354,132, against \$2,174,741; rubber \$369,353, against \$2,495,731, and chewing gum \$693,019, against \$879,666.

RUBBER ESTATES OF JOHORE. LTD.

The eighth annual report of the above company, covering the year 1913, records a crop of 323,501 pounds, against 106,261 pounds for 1912. Inclusive cost of production was 1s. 9½d. (43.58 cents) per pound and gross price realized 2s. 8¼d. (65.37 cents) per pound. Three new washing mills were erected during the year and additional ones will be installed in 1914.

PATAING RUBBER ESTATES SYNDICATE (FEDERATED MALAY STATES).

The annual report shows the inclusive cost price as 1s. 0.79d. (25.87 cents) per pound. Forward sales for 1913 were 72 tons at an average gross price of 4s. 3.57d. (104.06 cents) per pound. A dividend (including the interim payment) of 150 per cent. was declared for 1913. The yield in 1913 was 485,627 pounds, against 429,547 pounds in 1912.

The Colombian Congress (law 52 of 1913) appropriated \$20,000 to explore the Caqueta and Putumayo countries of the southern border of Colombia and for a general report on the possibility of their colonization, the plan being to grant unconditionally 125 acres to each family or man over 21 years of age immigrating there.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED MAY 5, 1914.

- N**O. 1,095,220. Vehicle wheel. M. Malek, New York, N. Y.
- 1,095,257. Spring wheel. A. M. Wolf, Plymouth, Wis.
- 1,095,264. Teething device. J. S. Bridges, assignor to Koolbite Toy Co.—both of Chicago, Ill.
- 1,095,283. Repair tool for pneumatic tires. E. E. Miller, Milwaukee, Wis.
- 1,095,287. Emergency tire for automobiles or similar uses. S. C. Ralston, Battle Creek, Mich.
- 1,095,349. Demountable tire rim. F. M. Osborne, Anaconda, Mont.
- 1,095,385. Demountable rim for resilient tires. C. W. Cramer, Scranton, Pa.
- 1,095,386. Emergency tire. C. C. Dabelstein, Detroit, Mich.
- 1,095,395. Production of isoprene. A. Heinemann, South Kensington, London, England.
- 1,095,416. Resilient wheel. E. A. Pierce, Sacramento, Cal.
- 1,095,451. Non-slip attachment for vehicle wheels. T. J. Clark, Milwaukee, Ore., assignor to T. J. Clark Co., Portland, Ore.
- 1,095,553. Raisin seeding machine, comprising a soft rubber roller. N. B. Converse, Fresno, Cal.
- 1,095,584. Process of making combs. W. J. McIntosh, Arlington, N. J., assignor of one-half to H. Schloss, New York, N. Y.
- 1,095,601. Machine for cutting sheets into strips. J. N. McLean, Haverhill, Mass.
- 1,095,681. Bust supporter. G. B. Smith, Philadelphia, Pa.
- 1,095,699. Folding machine. Q. W. and I. E. Booth and L. W. G. Flynt, Rochester, N. Y., assignors to Boston Machine Works Co., a corporation of Massachusetts.
- 1,095,701. Dress shield. J. C. Plade, assignor of one-half to C. L. Plade—both of San Francisco, Cal.
- 1,095,752. Hat fastener with rubber inner facing. G. A. Ulrich, Mexico, Mexico.
- 1,095,770. A detachable tire carrying rim for vehicle wheels. J. A. Anglada, New York, N. Y., assignor to Universal Rim Co., Chicago, Ill.
- 1,095,771. Vehicle wheel rim. J. A. Anglada, New York, N. Y., assignor to Universal Rim Co., Chicago, Ill.
- 1,095,775. Demountable wheel rim. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,095,776. Automobile wheel with a demountable rim. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,095,777. Pneumatic tire carrying rim. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,095,778. Demountable tire rim. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,095,779. Automobile wheel. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,095,821. Spring wheel. G. E. Crawford, Britton, Okla.
- 1,095,834. Flexible dress overshoe. C. L. K. Ferguson, Philadelphia, Pa.
- 1,095,846. Tire. C. Gaul, Brooklyn Hills, N. Y.
- 1,095,854. Clinical thermometer case. O. Gray, Little Rock, Ark.
- 1,095,861. Cushioned tire for vehicles. A. H. Henderson, assignor to the Henderson Rubber Co.—both of Baltimore, Md.
- 1,095,947. Garment-holding belt of uncovered elastic rubber. S. H. Thorp, Charters Tower, Queensland, Australia.
- 1,095,950. Device for disinfecting telephones, comprising a rubber bulb. R. B. Adams, C. H. Wells, and H. G. Payne, Westerville, Ohio.
- 1,095,953. Wheel for automobiles. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,095,956. Resilient vehicle wheel. E. M. Butler, Los Angeles, Cal.
- 1,095,969. Nipple for nursing bottle. J. C. Poore, Chicago, Ill.
- 1,095,988. Manufacture of coating and impregnating materials. C. Roth, Frankfurt-on-Main, Germany.
- 1,095,996. Demountable rim. C. G. Hawley and E. K. Baker, assignors to Universal Rim Co.—all of Chicago, Ill.
- 1,096,008. Shoe heel. F. A. Nolan, St. Paul, Minn.

Designs.

- 45,723. Rubber or elastic vehicle tire. A. D. Nichols, San Francisco, Cal., and W. W. McMahon, Detroit, Mich., assignors to United States Tire Co., New York, N. Y.
- 45,734. Playing ball. G. C. Worthington, assignor to the Worthington Ball Co., Elyria, Ohio.

Trade Marks.

- 65,537. L. E. Berebaum, Chicago, Ill. The words *A-Just-It* in a fancy design. For hose supporters and suspenders.
- 75,549. The Fisk Rubber Co., Chicopee Falls, Mass. Picture of a child ready for bed, holding a tire in one hand and a candle in the other, and beneath it the words *Time to Retire*. For pneumatic and solid rubber vehicle tires.
- 76,222. J. S. Rapson, Elkins Park, Pa. The word *Dandy*. For rubber erasers.
- 77,021. H. S. Griswold, Phoenix, Ariz. The words *Do Good*. For tire healing compound.

ISSUED MAY 12, 1914.

- 1,096,084. Golf ball marking device. W. T. West, Philadelphia, Pa.
- 1,096,098. Mixing machine. E. C. Cummings, Waterloo, Iowa.
- 1,096,101. Anti-slipping device. M. J. Frambach and A. R. Corrington, Heaton, Iowa, assignors to J. C. Gavan, Des Moines, Iowa.
- 1,096,112. Process for making rubber printing press blankets. G. Kush, New York, N. Y.
- 1,096,184. Emergency covering for hats. C. Mullaney, New York, N. Y.
- 1,096,206. Exercising apparatus. J. F. Thomas, Clarinda, Iowa.
- 1,096,232. Hose reel. F. A. Foster, Battle Creek, Mich.
- 1,096,286. Composition of matter comprising vulcanized rubber compound, and process for making same. E. B. Cook, Danvers, Mass., assignor to Fibre Products Co., Boston, Mass.
- 1,096,380. Resilient wheel. C. H. Light, assignor of one-half to C. W. Seipel—both of Des Moines, Iowa.
- 1,096,394. Resilient wheel. K. D. Saulpaw, Calhoun, Tenn.
- 1,096,408. Detector and alarm for pneumatic tires. S. W. Waterhouse, San José, Cal.
- 1,096,467. Wheel tire. H. F. Spellhouse, Philadelphia, Pa., assignor to the Tension Tire Co., Wilmington, Del.
- 1,096,477. Diaper protector. I. M. Weisert, New York, N. Y.
- 1,096,487. Method of manufacturing leather pneumatic tire covers. G. W. Bell, Stockport, England.
- 1,096,502. Machine for applying ferrules or bands to hose. H. Gibbs, assignor to W. D. Allen Manufacturing Co.—both of Chicago, Ill.
- 1,096,503. Hose clamp. H. Gibbs, assignor to W. D. Allen Manufacturing Co.—both of Chicago, Ill.
- 1,096,515. Elastic heel for boots and shoes. J. H. Rubin, New Haven, Conn.
- 1,096,526. Pneumatic tire indicator. F. H. Brunig, Kansas City, Mo.
- 1,096,535. Tire patch. W. C. Howard, Kansas City, Mo.
- 1,096,574. Life preserving garment. A. Telcky, New York, N. Y.
- 1,096,607. Diver's suit. J. F. Deray, assignor to himself; C. Lebrecht and A. P. Deray, assignors to himself.
- 1,096,659. Tire body construction. P. E. Wirt, Bloomsburg, Pa.
- 1,096,704. Washing device for automobiles. H. T. Ford, Central Valley, N. Y.
- 1,096,721. Truck tire. R. E. Jamieson, Montreal, Que., Canada.
- 1,096,749. Spring wheel. J. E. Pinguely, Melbourne, Ky.
- 1,096,761. Mask. C. Scheer, Silverton, Col.

Designs.

- 45,741. Rubber ball. B. De Mattia, Garfield, N. J., assignor to F. A. Cigol Rubber Co., Paterson, N. J.
- 45,766. Tire. J. Neary, assignor to Kokomo Rubber Co.—both of Kokomo, Ind.

Trade Marks.

- 70,980. Northern Shoe Co., Duluth, Minn. The word *Northern Maid*. For boots and shoes.
- 74,481. W. B. Shelp, Houston, Tex. The word *Repeater*. For products of rubber manufacture, consisting of rubber belting, hose, machinery packing, and tires for automobiles and bicycles.
- 75,648. G. W. Frazier, New York, N. Y. The word *Mcmermaid*.
- 77,217. Rogers Peet Co., New York, N. Y. The word *Gymkhana*. For rain coats and other garments.

ISSUED MAY 19, 1914.

- 1,096,817. Vehicle wheel. L. Anderson, Lake Creek, Tex.
- 1,096,818. Changeable tread for automobiles. E. O. Anderson, Glenwood, Fla.
- 1,096,842. Vehicle tire. G. Kelly, Hinsdale, Ill.
- 1,096,896. Printers' blanket. F. E. Ellis, Revere, Mass.
- 1,096,959. Pneumatic spring wheel. A. O. Schoelch, Shelbyville, Ind.
- 1,096,971. Rubber patch clamp for hose. E. D. VanDoren, Beardstown, Ill.
- 1,096,980. Self adjusting tire inner tube protector. C. L. Witsaman, assignor to the Firestone Tire & Rubber Co.—both of Akron, Ohio.
- 1,097,017. Machine for making finger cots and the like. J. Hadfield, assignor to the Hadfield Rubber Co.—both of Akron, Ohio.
- 1,097,018. Glove. J. Hadfield, assignor to the Hadfield Rubber Co.—both of Akron, Ohio.
- 1,097,037. Core. G. L. Mather, Akron, Ohio.
- 1,097,070. Brace and support for pelvic viscera. S. M. Anderson, Brooklyn, N. Y.
- 1,097,114. Spring wheel. C. L. H. Wraae and J. Liddell, Cuba, Wis.
- 1,097,201. Apparatus for heating inflating gas in balloons. R. H. Upson, assignor to the Goodyear Tire & Rubber Co.—both of Akron, Ohio.
- 1,097,237. Resilient vehicle tire. S. S. Krayner, St. Louis, Mo.
- 1,097,239. Anti-skid means for shoes. F. L. Kryder, Akron, Ohio.
- 1,097,287. Manufacture of brushes. T. F. Barry, assignor to Rubber & Celluloid Harness Trimming Co.—both of Newark, N. J.
- 1,097,295. Glare shield for vehicles, comprising a suction cup. C. H. Brown, C. L. Swartout and M. J. Fitzgerald—all of Richmond, Cal.

- 1,097,348. *Vehicle tire.* E. R. M. V. media, Cal.
 1,097,383. *Vehicle tire.* C. N. N. Y. N. Y.
 1,097,427. *Vehicle tire.* W. H. H. R. B. Eng
 land.
 1,097,444. *Vehicle tire.* E. H. E. P.
 1,097,550. *Vehicle tire.* H. H. H. P.
 1,097,596. *Vehicle tire.* C. Specht, Woodhaven, N. Y.

Designs.

- 45,789. *Water bottle, syringe bag or similar article.* C. E. Campbell, Ashland, Ohio.
 45,807. *Tire tread.* G. W. Greene, assignor to Ten Broeck Tyre Co.—
 45,810. *Automobile wheel rim.* M. F. Kettler, assignor to Downing Pneumatic Tire Co., both of Elyria, Ohio.
 45,827. *Automobile wheel rim.* M. F. Kettler, assignor to Downing Pneumatic Tire Co., both of Elyria, Ohio.

Trade Marks.

- 75,445. *Dreadnaught Tire & Rubber Co., Baltimore, Md. The word Dreadnaught.* For rubber vehicle tires and inner tubes therefor.
 75,652. *L. P. Larson, Jr. Co., Chicago, Ill. The words L. P. L. Winter.* For rubber vehicle tires and inner tubes.
 76,030. *F. H. Flee Corporation, Philadelphia, Pa. The word Panomint.* For chewing gum.
 76,050. *F. H. Flee Corporation, Philadelphia, Pa. The words Spring Root.* For chewing gum.
 76,136. *The estate of J. G. Hetzel, Newark, N. J. Picture of a boy playing soldier, using an empty cement can as a hat and another can as a drum.* For elastic rubber roof cement.
 76,172. *Dreadnaught Tire & Rubber Co., Baltimore, Md. The word Dixie.* For rubber vehicle tires and inner tubes.
 76,847. *Emery & Marshall Co., Haverhill, Mass. The word Suffragette* in form of a semi-circle. For shoes made of leather, canvas, cloth and rubber.

ISSUED MAY 26, 1914.

- 1,097,608. *Extra tire lock.* J. U. Barr, New York, N. Y.
 1,097,630. *Fountain brush.* I. N. Hollingsworth, Lauderdale, Miss.
 1,097,647. *Water bottle.* H. P. K. N. Y. N. Y., and M. C. Schweinert, West Hoboken, N. J.
 1,097,660. *Wheel and tire.* A. V. Mitchell, Washington, D. C.
 1,097,682. *Resilient tire.* H. J. Sherrill, Salida, Cal.
 1,097,746. *Hose nozzle holder.* F. H. Benton, Denver, Col.
 1,097,820. *Puncture proof inner lining for pneumatic tires.* W. A. Ray, Jackson, Ohio.
 1,097,824. *Resilient filler for elastic vehicle tires.* C. S. Staten, Dallas, Tex.
 1,097,829. *Resilient wheel.* C. O. Vantrease, Nashville, Tenn.
 1,097,973. *Tennis or like ball.* J. Gordon, Dresden, Germany.
 1,098,017. *Tire construction.* J. H. Clune, Springfield, Mass.
 1,098,028. *Spring vehicle wheel.* W. H. Fahrney, Chicago, Ill.
 1,098,034. *Garment comprising an elastic waist band.* L. Goldfinger, Chicago, Ill.
 1,098,043. *Tire chain.* P. F. Larson, Chicago, Ill.
 1,098,102. *Testing machine.* C. L. Elmes, Winnetka, Ill.
 1,098,103. *Spare tire holder.* A. Freschl, Detroit, Mich.
 1,098,110. *Life saving garment.* E. Heberlein, Oceanpark, Cal.
 1,098,163. *Rim for vehicle wheels.* T. Midgley, Worthington, Ohio.
 1,098,173. *Tire inflating apparatus.* F. A. Ruff, Newark, N. J.
 1,098,191. *Vehicle wheel tire.* I. C. Terry, Monroe, La.
 1,098,194. *Molding machine.* O. J. Vesper, Ashland, Ohio.
 1,098,220. *Syringe.* F. Borsody, New York, N. Y.
 1,098,222. *Sanitary medicament ejector for rectal, vaginal and nasal uses.* F. H. H. both of Pottsville, Pa.
 1,098,265. *Hose coupling.* J. F. James, Billings, Mont.
 1,098,286. *Vehicle tire.* I. W. M. to the Faultless Rubber Co.—both of Ashland, Ohio.
 1,098,287. *Eraser holder.* C. E. Moon, Lakeport, Cal.
 1,098,294. *Hose coupling.* C. R. Patty, Memphis, Tenn.
 1,098,303. *Sounding figure toy with inflatable part.* A. Steiner, O. Lieberman and C. Scharfenberg, Sonneberg, Germany, assignors to L. Rees, London, England.
 1,098,311. *Apparatus for making molds.* G. E. Burns, Central Falls, R. I.
 1,098,331. *Artificial denture.* C. Rauhe, Dusseldorf, Germany.
 1,098,364. *Tire.* H. C. Seipp, Pittsburgh, Pa.

Reissue.

- 13,735. *Method of separating barytes from ores.* C. J. Greenstreet, Webster Groves, Mo.
 69,658. *I. B. Kleinert Rubber Co., New York, N. Y. The word Stayrite.* For dress shields.
 72,511. *For chewing gum.*
 76,146. *Form in design forming the letter F.* For rubber automobile and vehicle tires.

[NOTE: Printed copies of specifications of United States patents may be

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1913.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 6, 1914.]

- *945 (1913). *Spring wheel.* B. Mauley, W. P. Thacker and R. B. Barnard, Nokomis, Ill., U. S. A.
 956 (1913). *Machine for measuring continuous lengths of materials.* H. W. Mettler, 3, Bogenstrasse, St. Gallen, Switzerland.
 968 (1913). *Spring wheels for vehicles.* B. E. D. Kilburn, Chancery Lane Station Chambers, London.
 975 (1913). *Machine for measuring continuous lengths of materials.* H. W. Mettler, 3, Bogenstrasse, St. Gallen, Switzerland.
 976 (1913). *Isoprene.* J. Y. Johnson, 47 Lincoln's Inn Fields, London.
 985 (1913). *Reinforcement for pneumatic tire covers or repair patches.* G. Huysmans, 136 Rue de la Loi, Brussels, Belgium.
 1,043 (1913). *Rubber packing rings for piston valves.* V. Michelson, 172 Lancefield street, Glasgow.
 *1,051 (1913). *Teething pads, etc.* J. S. Bridges, 7 East Madison street, Chicago, Ill., U. S. A.
 1,070 (1913). *Vehicle wheel comprising a solid rubber ring on an inner metal ring.* E. W. Beech, 32 Lincoln Road, Peterborough.
 1,077 (1913). *For use in stretching and drawing materials.* J. A. Kett, 13 Gertrude street, Fulham Road, Chelsea.
 1,129 (1913). *Tire attachments to rims.* F. H. Harris, 36 Albert Drive, Low Fell, Durham.
 1,229 (1913). *Suction nozzle vacuum cleaner apparatus.* W. Griffiths, Wizard Dust Extractor Co., Vulcan Works, Frankfort street, Birmingham.
 1,249 (1913). *Machine for feeding and stretching fabrics, comprising rubber covered metal rollers.* G. Wood, 55 Bridge street, Ramsbottom, Lancashire.
 1,422 (1913). *Footballs.* G. Pfennig, 72 Guldenstrasse, Braunschweig, Germany.
 1,447 (1913). *Tire fabrics.* A. Woosnam, 10 New Court, Lincoln's Inn, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 13, 1914.]

- 1,478 (1913). *Floot for aerial machines comprising an inflatable air container of flexible waterproof material.* H. L. A. E. and H. O. Short, 56 Prince of Wales Mansions, Queen's Road, Battersea Park, London.
 1,508 (1913). *Surgical gloves.* Zieger & Wiegand, 21, Kirchstrasse, Volkmasdorf, Leipzig, Germany.
 1,547 (1913). *Projecting appliances for balls.* J. Brooks, 112 St. Andrews Road, Exmouth, Devon.
 1,577 (1913). *Rubber packing strips for safety razor blade.* C. Pflugbeil & Co., 16 Prinzessinnen Strasse, Berlin.
 1,579 (1913). *Tire vulcanizers.* B. Kisshazy, Miskolcz, Hungary.
 1,587 (1913). *A protective band for pneumatic tires.* A. E. Soper, 53 West Side, Clapham Common, London.
 *1,621 (1913). *Spring wheel with continuous outer rigid ring and helical springs.* T. T. Chaloner, 506 West Forty-seventh street, New York, N. Y., U. S. A.
 1,668 (1913). *Cow milkers.* W. H. Lawrence, 35 Melville street, Pollokshields, Glasgow.
 1,746 (1913). *Cover for spare tires, of waterproof fabric.* B. Brooks, Criterion Works, Great Charles street, Birmingham.
 *1,839 (1913). *A cushion tire.* W. D. McCormack, 1218 Second avenue, South, Nashville, Tenn., U. S. A.
 1,972 (1913). *Balloon fabrics.* B. D. Porritt and North British Rubber Co., Castle Mills, Fountainbridge, Edinburgh.
 1,976 (1913). *Machine for making pneumatic tire covers.* A. Mathern, Zollikon, Switzerland.
 2,020 (1913). *Securing billiard pocket to table by means of rubber covered rings.* P. C. Watts, 23 Alexandra Road, East Twickenham, Middlesex.
 2,064 (1913). *Masticating machine for india rubber.* J. E. Pointon, Westwood Works, Peterborough.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 20, 1914.]

- 2,097 (1913). *India rubber in apparatus for splitting skins.* G. W. Johnson, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.
 *2,194 (1913). *Spring wheel.* W. C. Fickes, Shirland, Ill., U. S. A.
 2,242 (1913). *Wheel tire.* M. D. Rucker, Foxley Lane, Surrey.
 2,256 (1913). *A rubber attachment for the handles of golf clubs, tennis rackets, cricket bats, etc.* E. G. Morley, 112 High Holburn, London.
 *2,286 (1913). *Rectal douches.* M. Iversen, 811 Ridge street, Stoughton, Wis., U. S. A.
 2,314 (1913). *Breathing bags.* D. C. H. Schumann and Hanseatische Apparatebau-Ges. vorm. L. Von Bremen & Co., 35 Rodingsmarkt, Hamburg, Germany.
 2,430 (1913). *Wind guards for vehicles, comprising rubber strips.* H. Brittain, 77 Alton street, Ladywood, Birmingham.
 *2,493 (1913). *Dress shields.* D. Basch, 199 Wooster street, New York, N. Y., U. S. A.
 2,558 (1913). *Tread bands projections and surfaces.* A. W. Farnan, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569,

Review of the Crude Rubber Market.

As it will be recalled, fine Pará and plantation rubbers were on a level on April 17, at 3s. 0½d (73.99 cents). By May 25 they had dropped respectively to 2s. 9¾d. (68.41 cents) and 2s. 4d (56.76 cents). Up to June 23 these two quotations ruled, with slight fluctuations. On June 24 plantation rubber dropped from 2s. 4¼d. (57.27 cents) to 2s. 3d (54.73 cents). This reduced quotation was still current on June 25, while fine Pará maintained the price of 2s. 9¾d. (68.41 cents), which had been in force on May 25, as compared with the figure of plantation rubber at that time of 2s. 4d. (56.76 cents). Thus, while fine Pará has kept its ground, plantation has dropped a penny, or about 2 cents, for the month.

Business on both sides of the water has reflected the indisposition of manufacturers to anticipate their requirements. When they have done so, it has been at a lower basis of price than was current for spot rubber in the principal markets. Thus one sale was reported of 100 tons plantation rubber at 54 cents; it being remarked that American dealers are willing to take on business at prices under those quoted by London operators.

Statistical returns show that the increase in Malayan supplies continues. Exports of rubber from the Federated Malay States for the first five months of this year were 11,544 tons, against 5,836 tons and 8,476 tons for the corresponding periods of 1912 and 1913. Aggregate shipments of all kinds of plantation rubber during the period from January 1 to May 31 were 19,866 tons, against 14,511 tons for the corresponding period of 1913; this result showing an increase of nearly 40 per cent.

The depreciation of rubber in the English market is illustrated by the fact that while receipts of all classes of rubber in the United Kingdom during the first four months of 1913 were 26,072 tons, with a value of \$46,612,720, this year's record for the same period was 26,371 tons, valued at \$30,830,990. Deliveries this year have been in excess of receipts.

Imports into the United States were heavy during the month of April, reaching 16,642,211 pounds as compared with 8,859,633 pounds in April, 1913. The totals for the ten months ending with April were: 1912—93,592,190 pounds; 1913—95,854,130 pounds; 1914—106,295,902 pounds.

After a postponement in consequence of the Whitsuntide holidays, the normal fortnightly London sales were resumed on June 9, when about 1,200 tons of plantation rubber were offered. This quantity met with fairly active competition, and the prices realized did not materially vary from those of the preceding sale. On the occasion of the auction of June 23 about 1,000 tons were brought forward; the prices obtained being in some cases somewhat above those of the preceding auction.

The Antwerp market gradually declined during the month of May, spot rubber being quoted at the end of the month about 15 per cent. below the level of the commencement. It would seem that the lower prices had stimulated business, as transactions aggregated 2,275 tons, against 1,370 tons for the corresponding period of last year. Stock at the end of May amounted to 356 tons as compared with 1,054 tons at the corresponding period of 1913. For June 23, a sale was announced of 77 tons Congo and 154 tons plantation.

At the Rotterdam sale of June 5, the offerings amounted to 55½ tons, of which quantity about three-quarters consisted of plantation rubber, which displayed a somewhat lower tendency, in harmony with the market. For the Congo qualities, the low prices offered were refused by sellers.

Nearly the whole of the quantity of 136 tons offered at Amsterdam May 27 (chiefly plantation) was sold at ruling quotations, although below valuations. A quantity of about 110 tons plantation rubber was announced for the Amsterdam sale of June 26.

Hamburg reports state that during the greater part of April and May consumers had kept aloof from the market; prices having given way during May. From the latter days of May a better feeling was recorded, particularly as to forward business.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and June 29, the current date:

PARA.	July 1, '13.	June 1, '14.	June 29, '14.
Islands, fine, new.....	82@83	61@63	58@59
Islands, fine, old.....	.....	63@64	59@60
Upriver, fine, new.....	87@88	70@71	68½@69
Upriver, fine, old.....	.....	71@73	69½@70
Islands, coarse, new.....	34@35	29@30	28@29
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	54@56	42@43	39½@41
Upriver, coarse, old.....	.....	.....	.....
Cameta	42@43	32@33	31½@32½
Caucho, upper	53@54	42@43	39@40
Caucho, lower .....	.....	.....	36@37

PLANTATION CEYLON.

Fine smoked sheet.....	72@73	57@59	57@63
Fine pale crepe.....	} near-by... { 70@72 } forward... {	57@59	56@57
Fine sheets and biscuits un-smoked.....			55½@56½
.....	70@71	55@57	56@57½

CENTRALS.

Corinto .....	.....	.....	41@42
Esmeralda, sausage	53@54	43@44	39@40
Guayaquil, strip .....	.....	.....	.....
Nicaragua, scrap	53@54	42@43	38@40
Panama .....	.....	.....	.....
Mexican plantation, sheet.....	.....	43@46	42@48
Mexican, scrap	53@57	40@42	38@40
Mexican, slab .....	.....	.....	.....
Mangabeira, sheet .....	.....	40@42	.....
Guayule .....	.....	.....	25@35
Balata, sheet .....	.....	64@65	45@48
Balata, block .....	.....	40@49	.....

AFRICAN.

Lopori, ball, prime.....	.....	49@53	45@52
Lopori, strip, prime.....	.....	.....	.....
Aruwimi .....	.....	35@47	35@46
Upper Congo, ball red... ..	.....	40@	38@42
Ikelenda .....	.....	35@45	35@45
Sierra Leone, 1st quality..	.....	37@40	35@40
Massai, red .....	.....	48@50	48@50
Soudan Niggers .....	.....	40@42	38@40
Cameroon, ball .....	.....	25@33	25@35
Pongola .....	.....	31@32	27@32
Madagascar, pinky .....	.....	.....	.....
Accra, flake .....	.....	22@23	22½@23

STATISTICS PARA INDIA RUBBER (IN TONS), INCLUDING CAUCHO.

STATISTICS FOR THE MONTH OF MAY.

	Para.	Cauchó.	1914. Tons.	1913. Tons.	1912. Tons.	1911. Tons.
Receipts at Para.....	1,780	1,111	2,880	2,880	3,410	3,000
Shipments to Liverpool.....	510	400	580	1,320	810	1,410
Shipments to Continental Ports.....	370	300	600	400	200	300
Shipments to America.....	1,340	570	1,910	1,610	1,900	1,010
American Imports.....	1,340	570	1,910	1,610	1,900	1,010
American Deliveries.....	1,290	730	2,020	1,340	1,480	1,517
Liverpool Imports.....	970	530	1,500	1,530	1,257	1,470
Liverpool Deliveries.....	975	530	1,505	1,657	1,417	1,446
Continental Imports.....	340	160	500	210	300	330
Continental Deliveries.....	360	160	520	180	240	310

VISIBLE SUPPLY—1st JUNE, 1914.

	1914. Para.	1913. Cauchó.	1912.	1911.
Stock in England, Para, 1st hands.....	610	1,033	1,070	4,000
Cauchó.....	310	594	290	860
Stock in Para, 1st hands.....	180	260	540	1,540
2nd hands.....	90	40	100	760
Syndicate.....	800	810	2,240	2,810
Stock in America.....	270	140	180	340
Stock on Continent.....	20	10	380	130
Afloat—Europe.....	350	410	1,390	700
Afloat—America.....	20	300	200	600
	3,190	1,470		

Total Visible Supply, including Cauchó. 4,660 6,096 6,880 12,040

CROP STATISTICS—30th JUNE, 1913, 31st MAY, 1914.

	Para.	Cauchó.	1913/14.	1912/13.	1911/12.	1910/11.
Para.....	18,180	8,800	37,080	39,850	36,790	35,780
Para Shipments to Europe.....	14,200	4,560	18,760	22,850	18,390	18,590
Para Shipments to America.....	13,950	4,100	18,050	18,710	19,400	12,650
England Landings, net.....	13,765	16,492	13,780	14,350		
England Deliveries, net.....	14,585	17,306	17,290	12,059		
America Landings, net.....	17,290	18,010	21,225	13,260		
America Deliveries, net.....	17,050	18,000	20,945	13,060		
Continental Imports, net.....	3,800	4,570	3,200	3,000		
Continental Deliveries, net.....	4,020	4,285	3,180	2,960		

POSITION—1st JUNE, 1914.

Increase in Receipts during May, 1914, against May, 1913.....	10
Decrease in Receipts—Crop, July/May, 1913/14, against 1912/13.....	2,770
Decrease in Deliveries—Crop, July/May, 1913/14, England and Continent, against 1912/13.....	1,786
Decrease in Deliveries—Crop, July/May, 1913/14, America, against 1912/13.....	650
Decrease in Visible Supply Para Grades, against 1st June last year.....	1,436
Decrease in Stock, England, May 31st, 1914, against May 31st, 1913.....	726

WM. WRIGHT & CO. RUBBERS,
21, Mincing Lane, London, E.C.

London, 4th June, 1914.

During the month 50 tons Para have been shipped from Europe to America.

*A decrease of 2,830 tons Rubber, and increase of 60 tons Cauchó.

Rotterdam.

HALLSAR & DE VRIES report [June 4]:

The quantities announced for tomorrow's sale include 14 tons Congo, 26 tons Hevea and 6 tons Para.

Amsterdam.

JOOSTEN & JANSSEN report [May 27]:

On account of the weaker tone ruling in the market, today's sale displayed a rather quiet tendency; prices for Hevea being on the whole somewhat below the parity of those abroad. The next subscription sale of about 110 tons, nearly all plantation, is announced for June 26.

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS—Prices paid by consumers for carload lots, per pound:

	June 29, '14.
Old rubber boots and shoes—domestic.....	67½@ 7
Old rubber boots and shoes—foreign.....	6½@ 6¾
Pneumatic bicycle tires.....	3¾@ 4
Automobile tires.....	5 @ 5½
Solid rubber wagon and carriage tires.....	5 @
White trimmed rubber.....	10 @ 10½
Heavy black rubber.....	3½@ 4
Air brake hose.....	3½@
Garden hose.....	1 @ 1½
Fire and large hose.....	2 @ 2½
Matting.....	5½@ 6
No. 1 white auto tires.....	5½@
Foreign auto tires.....	47½@ 5

Antwerp.

RUBBER STATISTICS FOR MAY.

DETAILS.	1914.	1913.	1912.	1911.	1910.
Stocks, April 1....kilos	250,189	990,270	437,513	599,114	470,468
Congo sorts.....	308,189	241,989	152,024	187,106	128,052
Other sorts.....	10,565	3,205	12,902	29,125	116,663
Plantation sorts.....	168,965	184,398	107,367	41,754	44,037
Aggregating.....	737,908	1,419,862	709,806	857,099	660,526
Stocks, May 31.....	356,185	1,053,993	444,437	614,010	543,863
Arrivals since Jan. 1—					
Congo sorts.....	1,151,685	1,318,775	1,243,101	1,259,621	299,338
Plantation sorts.....	1,113,855	868,109	514,692	299,316	222,131
Aggregating.....	2,328,923	2,233,405	1,816,430	1,794,030	1,659,607
Sales since January 1.....	2,532,019	1,690,472	2,046,531	1,768,232	1,657,256

May 26.—By the steamer *Albertville*:

Bunge & Co.....(Comp. Commerciale Congolaise) Kilos	32,000
do.....	500
do.....	8,700
do.....	21,800
do.....	5,700
do.....(Forminière)	1,400
Société Coloniale Anversoise.....(Communière)	3,500
do.....	45,200
do.....	1,400
do.....	5,800
Crédit Colonial & Commercial (Anc. L. & W. Van de	3,200
do.....	2,500
Osterrich & Co.....(Cie du Lubefu)	8,000
Comp. Colonial franco-belge (Charles Dethier)	
do.....(N'Kémé & N'Kéni)	2,900
W.....	1,000
	143,600

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

The following figures are taken from the monthly statement of the Ceylon Chamber of Commerce.)

	1913.	1914.
To Great Britain.....pounds	3,980,582	6,041,603
To United States.....	2,599,367	3,321,834
To Belgium.....	1,055,089	1,946,292
To Australia.....	220,151	44,423
To Germany.....	97,306	667,047
To Japan.....	81,461	152,511
To Austria.....	26,075	
To Italy.....	22,460	
To Holland.....	992	
To India.....	209	500
To Russia.....		98,482
To France.....		98,373
To Straits Settlements.....		35,552
Total.....	8,083,692	12,406,917

(Same period, 1912, 4,077,628; same period, 1911, 1,796,522.)

The export figures of rubber given in the above table include the imports re-exported. These amount to 1,563,077 pounds—1,286,109 pounds from the Straits and 265,344 pounds from India. To arrive at the approximate quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, May 18	Malacca, April 30	Penang, April 30	Port Swet- tenham, May 15	Total
Great Britain.....pounds	8,223,602	1,772,527	5,881,067	8,973,521	24,850,717
Continent.....	989,255		240,533	1,101,323	2,331,111
Japan.....	326,145				326,145
Ceylon.....	133,829		359,733	648,843	1,142,405
United States.....	4,200,594		339,067	136,590	4,676,251
Australia.....	27,883				27,883
Total, 1914.....	13,901,308	1,772,527	6,820,400	10,860,277	33,354,512
Total, 1913.....	9,529,315		4,389,733	10,530,769	24,649,817
Total, 1912.....	8,447,644		2,363,322	7,382,645	14,693,264
Total, 1911.....	4,777,644		1,480,300	4,494,251	8,051,195

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows:

"The commercial paper situation has remained practically the same in June as for April and May, the demand for paper continuing good, and the best rubber names ruling at 4@4½ per cent., and those not so well known from 5@6 per cent."

NEW YORK PRICES FOR MAY (NEW RUBBER).

	1914.	1913.	1912.
Islands, fine.....	.60@.72	.54@.61	.58@.63
Various (Fine).....	.42@.45	.42@.45	.42@.45

IMPORTS FROM PARA AT NEW YORK.

(See *Legend* for the Weight in Pounds.)

MAY 29.—By the steamer *Pacias* from Para and Manaos:

	Fin.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	88,200	13,000	89,400	400=	191,000
General Rubber Co.....	29,000	5,300	12,400	26,900=	73,600
Meyer & Brown.....	4,000	5,000	36,200	146,400=	234,100
Robinson & Co.....	133,700	22,200	52,100	44,400=	252,400
Henderson & Korn.....	81,700	.....	36,500	54,700=	172,900
H. A. Astlett & Co.....	59,400	12,400	4,500	67,300=	143,600
Henderson & Korn.....	.....	1,000	30,400	.....	38,600
W. R. Grace & Co.....	.....	.....	.....	27,300=	27,300
Johnstone, Whitworth & Co..	20,800	3,500	7,000	.....	31,300
Ed. Maurer & Co.....	.....	.....	2,000	2,900=	8,100
Total	465,900	66,200	270,500	370,300=	1,172,900

PARA RUBBER VIA EUROPE.

	Pounds.
Rubber & Guayule Agency, Inc. (Fine)...	5,000
Various (Fine)	22,500
Johnstone, Whitworth & Co. (Fine)	11,200

JUNE 1.—By the *Carmania*=Liverpool:
 Arnold & Zeiss (Fine)..... 7,000
 Arnold & Zeiss (Coarse)..... 2,000
 Various (Coarse)

20,200
 Henderson & Korn (Fine).... 2,200
 Henderson & Korn (Coarse).... 2,200
 Various (Coarse)

4,400
 JUNE 1.—By the *Baltic*=Liverpool:
 Johnstone, Whitworth & Co. 17,000
 W. R. Grace & Co. (Fine)..... 3,500
 Various (Fine)

11,200
 Various (Coarse)

42,900
 JUNE 1.—By the *Matura*=Ciudad Bolivar:
 General Export & Commission Co. (Fine)

3,500
 Yglesias, Lobo & Co. (Coarse).... 600
 Various (Caucho)

4,500
 JUNE 5.—By the *Aquitania*=Liverpool:
 Various (Caucho)

12,000
 JUNE 5.—By the *Pretoria*=Hamburg:
 Meyer & Brown (Fine).....

19,000
 JUNE 10.—By the *President Grant*=Hamburg:
 Rubber & Guayule Agency, Inc. (Fine)

13,500
 Various (Fine)

83,500
 JUNE 13.—By the *Cedric*=Liverpool:
 Meyer & Brown (Fine).....

17,000
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

22,500
 Various (Fine)

6,500
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

29,000
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

2,000
 Various (Fine)

1,200
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

3,200
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

2,000
 Various (Fine)

1,200
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

3,200
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

3,200
 JUNE 19.—By the *Lusitania*=Liverpool:
 Meyer & Brown (Fine).....

MAY 25.—By the *Suriname*=Belize:

500
 MAY 25.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

11,000
 JUNE 3.—By the *Thespis*=Bahia:
 Adolph Hirsch & Co.....

6,000
 MAY 25.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

11,000
 JUNE 1.—By the *Allemania*=Colombia:
 Caballero & Blanco..... 200
 Various (Fine)

1,400
 JUNE 2.—By the *Tenadores*=Port Limon:
 Suzarte & Whitney..... 2,000
 Various (Fine)

2,000
 JUNE 3.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

11,000
 JUNE 3.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

11,000
 JUNE 3.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

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 Various (Fine)

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 Various (Fine)

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 Rossbach Bros. & Co..... 33,500
 Various (Fine)

11,000
 JUNE 3.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

11,000
 JUNE 3.—By the *Suriname*=Belize:
 Rossbach Bros. & Co..... 33,500
 Various (Fine)

MAY 21.—By the *Bataria*=Hamburg:

11,200
 W. R. Grace & Co.....
 W. Stiles

11,200
 Henderson & Korn.....
 Rubber & Guayule Agency, Inc.

6,000
 Ed. Maurer & Co.....
 Various (Fine)

11,200
 MAY 23.—By the *Oceano*=Colombo:
 Meyer & Brown.....

60,000
 Ed. Maurer & Co.....
 Various (Fine)

37,500
 Rubber & Guayule Agency, Inc.
 W. Stiles

4,000
 Ed. Maurer & Co.....
 W. R. Grace & Co.....

40,000
 Various

227,100
 MAY 25.—By the *Philadelphia*=Southampton:
 Meyer & Brown.....

50,000
 W. Stiles

6,700
 Ed. Maurer & Co.....
 Various (Fine)

30,000
 Arnold & Zeiss

47,500
 Rubber Trading Co.....
 W. R. Grace & Co.....

7,000
 Various

174,700
 MAY 25.—By the *Ambria*=Singapore:
 Meyer & Brown.....

5,600
 W. R. Grace & Co.....
 The B. F. Goodrich Co.....

55,000
 Arnold & Zeiss

33,500
 Henderson & Korn.....
 Ed. Maurer

12,500
 Various

190,100
 MAY 25.—By the *Philadelphia*=Southampton:
 Meyer & Brown.....

50,000
 W. Stiles

6,700
 Ed. Maurer & Co.....
 Various (Fine)

30,000
 Arnold & Zeiss

47,500
 Rubber Trading Co.....
 W. R. Grace & Co.....

7,000
 Various

174,700
 MAY 25.—By the *Ambria*=Singapore:
 Meyer & Brown.....

5,600
 W. R. Grace & Co.....
 The B. F. Goodrich Co.....

55,000
 Arnold & Zeiss

33,500
 Henderson & Korn.....
 Ed. Maurer

12,500
 Various

OTHER NEW YORK ARRIVALS.

CENTRALS.

Pounds.
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

1,000
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

1,000
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

1,000
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

1,000
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

1,000
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

1,000
 MAY 22.—By the *Prinz August Wilhelm*=Colon:
 A. L. Morens..... 300
 Isaac Brandon & Bros..... 700

EAST INDIAN.

[*Denotes plantation rubber.]

MAY 20.—By the *Oceanic*=Southampton:

24,000
 Arnold & Zeiss

7,500
 Robinson & Co.....

11,200
 Raw Products Co.....

27,000
 Rubber & Guayule Agency, Inc.

25,000
 Goodyear Tire & Rubber Co.....

30,000
 Various

MAY 27.—By the *Potsdam*=Amsterdam:

10,000
 Robinson & Co.....

5,000
 Arnold & Zeiss

12,000
 Various

27,000
 MAY 29.—By the *Graf Waldersee*=Hamburg:
 Meyer & Brown.....

18,000
 Henderson & Korn.....

65,000
 W. Stiles

6,700
 Arnold & Zeiss

11,200
 Rubber & Guayule Agency, Inc.

Ed. Maurer	*4,000	
Rumsey & Greutert Co., Inc....	*7,200	
Various	*17,500	*132,600

JUNE 1.—By the *Minnekahta*=London:

General Rubber Co.....	*190,000	
Henderson & Korn.....	*125,000	
Charles T. Wilson.....	*60,000	
Johnstone, Whitworth & Co....	*22,500	
W. R. Grace & Co.....	*2,000	*399,500

JUNE 1.—By the *Minnekahta*=Hamburg:

Arnold & Zeiss.....	*12,500	
Rubber & Guayule Agency, Inc..	*11,200	
Henderson & Korn.....	*4,500	
Various	*27,000	*55,200

JUNE 1.—By the *St. Louis*=Southampton:

Arnold & Zeiss.....	*2,000	
Rumsey & Greutert Co., Inc....	*4,431	
Various	*25,569	*62,000

Meyer & Brown.....	*22,500	
Rubber & Guayule Agency, Inc..	*4,500	
Various	*55,000	*86,500

JUNE 2.—By the *New Amsterdam*=Amsterdam:

Various		*15,000
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JUNE 4.—By the *Finland*=Singapore:

Meyer & Brown.....	*11,200	
Arnold & Zeiss.....	*42,000	
Johnstone, Whitworth & Co....	*8,000	
Ed. Boustead & Co.....	*55,000	
The B. F. Goodrich Co.....	*11,200	
Ed. Maurer	*30,000	
Hadden & Co.....	*4,500	
Henderson & Korn.....	*70,000	
Goodyear Tire & Rubber Co....	*50,000	
Various	*110,000	*391,900

JUNE 4.—By the *St. Paul*=Southampton:

Meyer & Brown.....	*17,500	
W. Stiles	*10,000	
Ed. Maurer	*20,000	
Henderson & Korn.....	*4,000	
Robinson & Co.....	*16,000	
Arnold & Zeiss.....	*4,000	
Various	*4,500	*76,000

JUNE 5.—By the *Pretoria*=Hamburg:

Ed. Maurer	*8,225	
Henderson & Korn.....	*1,500	
Rumsey & Greutert Co., Inc....	*13,275	*23,000

JUNE 8.—By the *Katuna*=Colombo:

Meyer & Brown.....	*200,000	
Rubber & Guayule Agency, Inc..	*33,500	
Arnold & Zeiss.....	*55,000	
Henderson & Korn.....	*20,000	
Robinson & Co.....	*33,500	
W. Stiles	*55,000	
Johnstone, Whitworth & Co....	*55,000	
Various	*111,000	*563,000

JUNE 8.—By the *Minnehaha*=London:

Meyer & Brown.....	*105,000	
Henderson & Korn.....	*90,000	
General Rubber Co.....	*385,000	
Charles T. Wilson.....	*75,000	
Ed. Boustead & Co.....	*13,500	
Johnstone, Whitworth & Co....	*50,000	
Raw Products Co.....	*10,000	
W. Stiles	*9,000	
Robert Badenhop	*6,700	
Various	*90,000	*834,200

JUNE 9.—By the *Noordam*=Antwerp:

Meyer & Brown.....	*62,000	
General Rubber Co.....	*12,500	
Rubber & Guayule Agency, Inc..	*6,700	
Rubber Trading Co.....	*22,500	
Various	*45,000	*148,700

JUNE 9.—By the *Noordam*=Amsterdam:

General Rubber Co.....	*22,500	
Henderson & Korn.....	*9,000	
Manhattan Rubber Mfg. Co....	*7,000	*38,500

JUNE 10.—By the *President Grant*=Hamburg:

Meyer & Brown.....	*4,500	
Henderson & Korn.....	*11,200	

Rubber & Guayule Agency, Inc..	*1,100	
Rumsey & Greutert Co., Inc....	*4,204	
Various		*50,800

JUNE 10.—By the *Niagara*=Havre:

Michelin Tire Co.....	*50,000	
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JUNE 10.—By the *Oceanic*=Southampton:

Meyer & Brown.....	*4,500	
W. Stiles	*3,000	
Ed. Maurer	*3,000	
Various	*2,500	*13,000

Meyer & Brown.....	*18,000	
Robert Badenhop	*50,000	
Various	*50,000	*132,000

JUNE 15.—By the *New York*=Southampton:

Ed. Maurer	*11,200	
Rumsey & Greutert Co., Inc....	*7,956	
Various		*44,200

Meyer & Brown.....	*21,000	
Rubber & Guayule Agency, Inc..	*15,000	
Arnold & Zeiss.....	*12,500	
W. Stiles	*7,500	
Robinson & Co.....	*11,200	
Various		*162,000

JUNE 15.—By the *Minnetonka*=London:

General Rubber Co.....	*265,000	
Charles T. Wilson.....	*60,000	
Henderson & Korn.....	*22,500	
Ed. Maurer	*26,500	
Johnstone, Whitworth & Co....	*11,200	
Rubber & Guayule Agency, Inc..	*4,500	
Ed. Boustead & Co.....	*2,500	
Various	*30,000	*422,200

JUNE 16.—By the *Ryndam*=Amsterdam:

Arnold & Zeiss.....	*13,500	
Johnstone, Whitworth & Co....	*1,100	
Rubber Trading Co.....	*11,200	
Various	*37,000	*62,800

JUNE 17.—By the *Olympic*=Southampton:

Robinson & Co.....	*22,500	
Arnold & Zeiss.....	*3,500	
Rubber Trading Co.....	*6,700	
Charles T. Wilson.....	*3,500	
United Malaysian Rubber Co..	*1,100	
Various	*80,000	*117,300

JUNE 18.—By the *Pennsylvania*=Hamburg:

Ed. Maurer	*20,000	
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AFRICAN.

POUNDS.

MAY 21.—By the *Batavia*=Hamburg:

Rubber & Guayule Agency, Inc..	6,500	
Ed. Maurer	25,000	
Various		31,500

MAY 25.—By the *Philadelphia*=Southampton:

Various	45,000	
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MAY 26.—By the *Auchenerag*=Lisbon:

Various	7,500	
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MAY 27.—By the *Potsdam*=Amsterdam:

Robinson & Co.....	20,000	
Various	5,000	25,000

MAY 28.—By the *Victorian*=Liverpool:

Earle Bros.	2,200	
Various	50,000	52,200

MAY 29.—By the *Graf Waldersee*=Hamburg:

Rubber & Guayule Agency, Inc..	7,000	
Ed. Maurer	11,200	
Various		18,200

JUNE 1.—By the *Niagara*=Havre:

Various		11,200
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Various	15,000	18,000
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JUNE By the *Kronland*=Antwerp:

Rubber Trading Co.....	1,500	
Various	3,000	
Various	9,500	14,000

JUNE 4.—By the *St. Paul*=Southampton:

Various		5,000
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JUNE 5.—By the *Pretoria*=Hamburg:

Ed. Maurer	8,270	
Rumsey & Greutert Co., Inc....	8,430	16,700

Johnstone, Whitworth & Co....	5,000	
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JUNE 9.—By the *Finland*=Antwerp:

Various	15,000	28,500
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JUNE 10.—By the *Oceanic*=Southampton:

Various		4,000
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JUNE 10.—By the *President Grant*=Hamburg:

Meyer & Brown.....	8,500	
Rubber & Guayule Agency, Inc..	11,000	19,500

JUNE 12.—By the *Mauretania*=Liverpool:

General Rubber Co.....		11,200
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JUNE 13.—By the *Cedric*=Liverpool:

W. R. Grace & Co.....		2,200
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JUNE 15.—By the *Minnetonka*=Havre:

Various		15,000
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JUNE 18.—By the *Pennsylvania*=Hamburg:

Ed. Maurer	14,141	
Rubber & Guayule Agency, Inc..	3,000	
Rumsey & Greutert Co., Inc....	2,359	19,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK, MAY, 1914.

Imports:	Pounds.	Value.
India rubber	15,938,993	\$8,325,628
Balata	26,610	13,766
Gutta percha	233,632	43,170
Gutta jelutong (Pontianak) ..	2,280,037	97,014
Total	18,479,272	\$8,479,578

India rubber	17,331	\$7,543
Balata	17,331	10,740
Rubber scrap, imported.....	1,403,328	97,867
Rubber scrap, exported.....	381,054	45,508
Reclaimed rubber, exported.	169,512	26,878

BOSTON ARRIVALS.

IMPORTS IN MAY, 1914.

	Pounds.	Value.
Gutta percha	774,081	\$49,381
Gutta jelutong	60,285	7,240
India rubber	281,143	138,646



Vol. 50.

July 1, 1914.

No. 4.

TABLE OF CONTENTS.

Editorials:

Has Successful Synthesis Arrived?.....	525
The Export Burden Rubber Has to Bear.....	525
Shall Labor Constitute a Privileged Class?.....	526
Rubber Consumption Compared with Population.....	526
The Binding Ties of Trade.....	527
And Why Not Rubber Tennis Courts?.....	527
Brazil to Borrow a Hundred Million More.....	528
The Demoralizing Force of Holidays.....	528
Minor Editorial	528
New Uses for India Rubber.....	529
The Crude Rubber Export Taxes of the World.....	530
The Making of a Fountain Pen.....	533
A New Slide Rule for Rubber Men.....	536
Foreign Commerce of the United States.....	537
Editor's Book Table.....	538
New Trade Publications.....	540
U. S. Rubber Reclaiming Co.....	541
The Rubber Trade in Boston.....	542
The Rubber Trade in Akron.....	542
Growing Popularity of Tire Hospitals.....	542
The Rubber Trade in Chicago.....	544
The Rubber Trade in Trenton.....	544
The Rubber Trade in Rhode Island.....	545
The Rubber Trade on the Pacific Coast.....	546
New Rubber Goods in the Market.....	547
Manufacturers Protest Against Legislative Discrimination...	549
A Calender Mill Room Layout.....	550
News of the American Rubber Trade.....	551
India Rubber Goods in Commerce.....	555
New Machines and Appliances.....	556
India Rubber Trade in Great Britain.....	559
The London Rubber Show Opens Auspiciously.....	560
British Consular Report on Trade of Para	562
German Rubber Export Statistics for 1913.....	564
Some Rubber Interests in Europe.....	565
The Akers Mission.....	566
Some Rubber Planting Notes.....	567
Rubber Notes from Singapore.....	568
Present and Future Amazonia.....	570
Notes from British Guiana.....	571
Notes from Dutch Guiana.....	571
Recent Patents Relating to Rubber.....	573
Review of the Crude Rubber Market.....	576

NEW JERSEY STATISTICS OF MANUFACTURES
FOR 1912.

IN the compilation of New Jersey manufacturing statistics recently issued the results are presented for the calendar year 1912 in comparison with those of the preceding annual period. The principal features of a general character are shown as follows:

TOTALS FOR NEW JERSEY.

	1911.	1912.
Number of establishments.....	2,475	2,556
Capital invested	\$848,600,943	\$919,137,610
Increase of capital in 1912.....		\$70,536,667
Percentage of increase.....		8.3
Consumption of material.....	\$565,946,362	\$648,411,083
Value of goods made (89 industries).....	\$940,760,552	\$1,051,402,715
Increased percentage of product.....		11.8
Proportion of business done to capacity, per cent.....	73.03	74.10

In this result, which has brought New Jersey over the billion dollar mark of production, the rubber industry has a prominent position, as may be seen by the following figures:

NEW JERSEY RUBBER INDUSTRY.

	1911.	1912.
Number of establishments.....	53	55
Capital invested	\$30,140,119	\$30,814,994
Increase of capital in 1912.....		\$674,875
Percentage of increase.....		2.2
Consumption of material.....	\$23,657,966	\$24,864,760
Value of goods made (hard and soft).....	\$36,057,242	\$38,527,590
Increased percentage of product.....		6.9
Proportion of business done to capacity, per cent.....	78.77	77.91
Total horse power.....	24,541	28,225

It will thus be seen that the proportion of business to capacity in the rubber industry for 1912 was 77.91 per cent., against an average percentage for the whole of New Jersey of 74.10 per cent. The industry occupied eighth place in the table of proportion between business done and capacity.

That employment has remained at about the same level throughout the year is illustrated by the number of hands employed in the rubber industry of New Jersey, which varied between 8,321 and 9,393. The total amount paid in wages for 1912 was \$4,859,100, representing average yearly earnings for employees of \$547.75.

This report is considerably fuller than any of its predecessors, and gives a good deal of additional information of interest, especially to manufacturers. In Part III there is an industrial chronology of New Jersey, covering the year ending September 30, 1913. This includes changes in hours and in wages, accidents, strikes and lock-outs, and also reports of new factories, improvements in existing works, and any fires that occurred in the different manufacturing plants. Among the improvements and additions to existing mills might be mentioned constructive work amounting to \$18,000, done by the W. A. Clark Wire Co., and improvements amounting to \$20,000 at the plant of the Woven Steel Hose & Wire Co., Trenton. The rubber company that suffered most from fire was the Harmer Rubber Reclaiming Works, of East Millstone, where the damage amounted to \$65,000.

According to a late report, rubber cultivation at Samoa is being slowly but steadily developed. The principal companies engaged in the industry are four English organizations, with an aggregate capital equaling \$900,000, and eight German ones with a total capital representing about \$1,750,000. The trees are in general too young to give a large yield.

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Vol. L. No. 5.

AUGUST 1, 1914.

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TABLE OF CONTENTS ON LAST PAGE OF READING.**NO PSYCHOLOGY IN THE AUTO. TRADE.**

IT is reported that Mr. Henry Ford, on the occasion of his recent visit to Washington, mentioned so widely in the daily press, greatly encouraged and heartened the President by his assurance that business generally was taking on a very lively aspect.

From the viewpoint of Mr. Ford and others engaged in the manufacture of motor vehicles, there certainly is no depression, "psychological" or otherwise. The average citizen may be resorting to the "movies" in place of the legitimate drama and he may be practicing many other stern and rigid economies, but as yet he has shown little disposition to forego his motor car. The registration of motor vehicles in the thirty odd states where this registration is required had reached a figure by the end of June nearly two hundred thousand higher than that for the entire year of 1913. The manufacturers of autos. report excellent business everywhere, and the twenty-four companies engaged in this work in Detroit turned out over forty-one thousand cars in the month of May—and May is esteemed, normally, a dull month.

All this bears out the remark of the philosopher who

said that humanity could do without the necessities of life but it must have the luxuries.

As an interesting corollary of the motor situation, it might be added that the horse plods on his even gait, in no way disturbed. It has been continuously prophesied for several years that with this vast increase of motor vehicles the horse would disappear and that very soon he could be found only in natural history museums sufficiently endowed to command the rarer specimens. But as a matter of fact there are more horses now in the United States than ever before. The count at the beginning of this year showed nearly twenty-one million of them, or over one-fifth of a horse per capita; and that is a higher percentage than was the case forty and fifty years ago, before ever motor cars, motorcycles or bicycles were dreamed of.

The gist of the matter is that the present age is an age of motion. The one universal desideratum is something to get about with. Everything else can wait. And this is the explanation of the fact that, while business generally is depressed—psychologically or categorically—the sale of the auto. goes cheerfully and undiminishedly on.

A MINOR BUT VASTLY POPULAR RUBBER SORT.

AS an ambition to excel is a distinguishing national trait, it will probably give all true Americans keen gratification to know that they are the greatest gum chewers on earth. A New York daily recently devoted a half column or more to setting forth the marked increase of the chewing gum habit in the United States during the last few years. It asserted that the consumption of this delicacy is five times as great now as it was a decade ago. By way of statistical corroboration it stated that the present annual consumption amounts to twenty-five million packages, each containing one hundred small bundles of five sticks. Accepting these figures as authentic, a little mathematical exertion will show that the hundred million people of the United States did away with twelve and a half billion sticks of chewing gum last year.

There is much in American national life to make the judicious grieve, but even the most pessimistic would hardly concede that they—including the toothless infant and the doddering centenarian—consume an annual average of one hundred and twenty-five sticks of gum.

As a matter of fact, the gum chewing contingent is largely confined to those exuberant people whose years range from 8 to 20, who constitute about one-quarter

of the population. To be sure, there are many members of that class who are not addicted to this habit, but on the other hand, there are undoubtedly many who have passed the 20-year mark who still cling to this delicacy; so that it would probably be conservative to estimate the chewers of gum at one-fourth of the citizen body. But to take the position that twenty-five million people consumed twelve and a half billion pieces of gum last year, or at the rate of five hundred pieces per capita, is making a statement that will hardly appeal to the reasoning mind. It might not be impossible, but it is distinctly improbable.

The journal referred to probably secured its figures from some optimistic sales promoter—a class of statisticians whose calculations are always prone to run along the higher levels. It should not be difficult, however, to arrive at a figure that should be approximately correct.

The essential feature of all chewing gum is chicle, and as chicle belongs to the great rubber family—being derived from the latex of the *Achras sapota*, which has a rubber content of over 17 per cent.—it might not be uninteresting to pursue this subject a step further and to discover how much of a factor in American life the product of this particular rubber tree may be.

During the last calendar year chicle was imported into the United States to the amount of 13,758,592 pounds, of which 4,896,996 pounds was re-exported, leaving for domestic use 8,861,596 pounds, which was made up into chewing gum. Now the question is,—How much did it make? Not a difficult question to answer—at least approximately. One of the little five stick packages retailing for a nickel weighs just an ounce. When all the various decorative wrappings are removed, the residual gum is reduced to one-half ounce in weight; and 50 per cent. of this weight may be told off for sugar, peppermint and the other ingredients employed to appeal to the palate. That is, the amount of chicle in five sticks of gum is one-quarter ounce. From which it may be readily deduced that a pound of chicle will make three hundred and twenty of the customary sticks of commerce. It follows further that the importation of chicle last year would make something over two billion, six hundred million sticks of gum. Apportioning this among the twenty-five million people who constitute the gum consuming class, it gives them an individual allotment of one hundred and five sticks a year—which seems fairly moderate and reasonable.

An interesting feature of this industry lies in the fact that this consumption of chewing gum calls for a yearly

expenditure on the part of those who engage in it of twenty-six million dollars—which is one-third of what Americans spend for rubber boots, arctics and over-shoes to preserve the national health, and one-fifth of what they spend for tires to make it possible to use the million and a quarter motor cars of one kind and another.

Here is a great chance for the moralist to recite how many kinds of uplift that twenty-six million dollars could be made to give humanity if properly applied. But that is another story. This treatise simply views the matter in the light of a widespread and increasing use for rubber—to be sure, one of the minor rubbers, but still an exceedingly popular variety, carrying chronic joy, not to mention possible dyspepsia, to the hearts and stomachs of millions of youthful or once youthful Americans.

WHEN THE RUBBER TRADE GENUINELY MIXES.

THE midsummer outing of the Rubber Club of America has come to be an event. Its last celebration, held July 14, is set forth elsewhere in this issue with proper circumstance and several photographic illustrations. No other feature in the life of the club is so effective in fostering and forwarding general trade amity, personal acquaintance and wholesome good fellowship as these July gatherings of rubber men. The midwinter banquet is not to be esteemed lightly; that is a notable function. But social activities at a formal dinner are always more or less circumscribed, and beside, no man can be altogether true to himself when hidden behind a vast expanse of shirt front and a white choker.

But in the midsummer outing all this is changed. There are freedom and informality, and an all-day chance to get acquainted. When a man who hasn't played baseball for twenty years goes to the bat and actually hits the ball and starts for "first," he instantly reverts to type; all veneer is laid aside, and he becomes his natural self for the rest of the day.

And then again, what could possibly mellow a man more towards his hated business rival than to trim him handsomely at quoits? It becomes evident at once that this business rival is really not such a bad fellow.

The rubber club during the last year or two has taken upon itself some tasks of great moment, the accomplishment of which will undoubtedly be of substantial benefit to the trade; but if the club were to do nothing more than to maintain intact and undiminished its midsummer outing, it would never need any other excuse for being.

COLOMBIA OUGHT TO THROW IN HER RUBBER TRADE.

LAST December Colombia revised her tariff, marking some articles up and some down. The rubber duties for the most part were lowered, as will be seen from the instances mentioned below. In the items cited the duties have been changed from pesos per kilogram into their equivalent in cents per pound, as being rather more intelligible to the average American rubber man.

The general tendency of the new tariff seems to be towards uniformity, as is shown by the fact that while the duty on rubber floor cloth has been reduced 75 per cent. and that on rubber mats increased 700 per cent., both now stand at 16 cents per pound. The same tendency is seen in rubber cotton cloth, as the thin rubbered cloth has been increased 8 per cent., to 50 cents per pound, while the thick rubbered cloth has been reduced 10 per cent., to 41 cents per pound. Tires have been increased 15 per cent., to 9 cents per pound; toys decreased 57 per cent., to 27 cents per pound. Footwear stands practically where it did before, at 45 cents per pound. There has been a reduction of 97 per cent. in the duties on driving belts and of 80 per cent. in the duties on hose, both being now almost on the free list, belts paying only 5 mills per pound and hose $4\frac{1}{2}$ mills per pound. Rubber soles and heels have been reduced 75 per cent., and like rubber mats pay 16 cents per pound. Rubber sponges have been reduced 25 per cent. and now pay 45 cents per pound, while rubber erasers are taxed at 68 cents per pound.

The reductions enumerated above are not yet in full effect, the new tariff carrying the provision that all increases should take effect at the rate of one-third each month for the ensuing three months, so that the increases took final effect last March, while the reductions did not begin to take effect until March and then went into operation at the rate of one-tenth per month, the full reduction not becoming operative until next January.

To be sure there are larger things in the world than the volume of rubber importations into Colombia. According to the latest statistics published—those of 1912—the rubber importations into Colombia amounted to one hundred and two thousand dollars for the year, of which the United States supplied about twenty-six thousand dollars. But perhaps with these lower duties the consumption of imported rubber goods will materially increase in that republic. If so, the United States ought certainly to do considerably better than this.

After spending four hundred million dollars for a canal which will enable Colombia to sail directly from

her front door to her side door, without making a circuit of twelve thousand miles around the continent, and after paying an additional twenty-five million dollars (if we do) for the privilege of conferring that great benefit on the Colombians, and after an apology framed with due humility for ever having dug the canal at all, it would seem as if Colombia might pass over to us the greater part of her rubber trade as a sort of *quid pro quo*.

"ONE OF THE FIVE LARGEST PRODUCERS."

THAT staid, sober and altogether reputable publication, the "New York Commercial," in a recent issue made the statement that a certain New England rubber manufacturing company—mentioning the company by name—"will in the fiscal year to October 31 next probably produce between 900,000 and 950,000 tons. This makes it one of the five largest producers in the country."

If the company's production of manufactured rubber goods reaches the volume mentioned in this item it certainly is entitled to be classed among the five largest producers. Taking rubber goods on an average—tires, belting, shoes and the other standard lines—it probably would be a conservative estimate to say that the crude rubber used in their manufacture would represent one-fourth of the weight of the finished goods. That is, in 900,000 tons of rubber manufactured goods there would be approximately 225,000 tons of crude rubber. But the world's output of crude rubber last year was only 113,000 tons. It is quite evident, therefore, that any manufacturing company which is consuming twice the entire crude rubber supply of the world in the manufacture of its goods may safely be assigned a fairly important place in the industry.

NORTH AMERICAN BANKS IN SOUTH AMERICA.

IN the June number of this publication the difficulties in the way of establishing direct banking relations between the United States and South American centers were described at some length. One North American bank, however, has decided to establish branches in Rio de Janeiro and Buenos Aires to determine if these difficulties cannot be overcome. Fortunately the bank that has essayed this task is one of the strongest financial institutions in the world and has the resources to command success. For the last four years it has seriously contemplated this undertaking, but its agents have unanimously advised delay. But with changing conditions and with the growing demand from the business men of the United States for direct banking facilities with South America, the directors of the National City Bank of New York believe the time has arrived to make the venture. It undoubtedly is an act of wise finance, and it assuredly is a fine instance of patriotism.

The Fourth International Rubber and Allied Industries Exhibition.

HELD AT ROYAL AGRICULTURAL HALL, LONDON,
JUNE 24 TO JULY 9.

THE Fourth International Rubber and Allied Industries Exhibition was opened at the Royal Agricultural Hall, Islington, on June 24, by Prince Arthur of Connaught, and continued until July 9, which terminated what was beyond any question the best of the four rubber expositions, from both a constructive and instructive standpoint. In calling upon Prince Arthur to declare the exhibition open, Sir Henry Blake thanked His Royal Highness for the honor done in consenting to open the exhibition, stated its objects, and incidentally paid a well deserved tribute to the organizing manager, Mr. A. Staines Manders.

After concluding his introductory remarks indicating that the amount of capital invested in the rubber industry exceeds £250,000,000, that 54 governments were showing their various products at the exhibition and dealing with its international character, he introduced Prince Arthur, who expressed his appre-

THE PRESS LUNCHEON.

On June 23, the day preceding the formal opening of the exhibition, the initial view, with luncheon, was afforded to the press, delegates and exhibitors. Succeeding the discussion of a most appetizing menu, the chairman—Sir Henry Blake—proposed the customary toasts and made his usual happy introductions. The speaker succeeding Sir Henry was Mr. John McEwan, of the Rubber Growers' Association, who dealt with the various uses of rubber from the cradle to the grave, among other things suggesting the highly useful character of an asbestos-lined winding sheet, and very humorously paraphrasing the "Seven Ages of Man," so as to make that famous passage fit the varied utilities of rubber.

He spoke of the work accomplished by the Rubber Growers' Association with reference to the general availability of plantation rubber.

Among the other speakers were Mr. FitzGibbon, Dr. Ferrao, and Mr. Theodore E. Smith.

Incidentally, each member of the press was presented with a package containing the following substantial and useful souvenirs: Hot water bottle (best British make) and tobacco pouch, both made of plantation rubber by the Leyland & Birmingham Rubber Co., Ltd.; two beautiful wallets, given by the Continental Caoutchouc & Gutta-percha Co.; two golf balls, given by the Dunlop Rubber Co., Ltd.; a box of high-grade combs, from the North British Rubber Co., Ltd., and an eraser in a hexagon box from the Standard Asphalt & Rubber Co.

MANY HIGHLY ENJOYABLE RECEPTIONS

This 1914 exposition was prolific of social events, which, by the way, have always been among the very pleasant features of the rubber shows which have gone before.

Succeeding the opening ceremony on June 24, Sir Henry Blake gave a reception and tea, which was largely attended and a very happy affair. Sir Henry was assisted in receiving by Lady Blake. During the afternoon an exhibition tennis match between Messrs. Cowdray and Hierons, both professionals, was played on the rubber court which was the special feature of the exhibit of the Leyland & Birmingham Rubber Co.

Probably no pleasanter reception than that given by the State of Pará and Pará Commercial Association, which occurred on Thursday, June 25, was given during the Exhibition. There was a delightful tea, and "tea," by the way, is a comprehensive term at a London rubber exhibition. There were no speeches and general joy prevailed. This function was attended by 150 guests, among whom were many persons of distinction.

The event of Friday, the 26th, was the visit of the Lord Mayor and Sheriffs, who constituted a glittering and highly edifying body. These distinguished gentlemen carefully inspected the various features of the exhibition and expressed themselves as being greatly pleased and much interested in what they saw.

On the afternoon of the 26th (which, by the way, was British Malaya Day) a reception was given by the British Malaya Committee, which was a largely attended and most successful event. Among those present were Sir John Anderson, G. C. M. G., late governor of the Straits Settlements; Sir William Taylor, K. C. M. G.; Sir Edward Ward, Sir Edward and Lady Birch, and a number of other well known people.

On June 27 the exhibition was honored by the official visit of the Belgian Minister to England and the Belgian Minister of the Colonies. In the afternoon the Belgian reception, always a noted event of rubber exhibitions, was held. The feature of this re-



THE OPENING CEREMONY

ciation of having been invited to participate in an occasion of such importance in the history of the rubber industry. He had gladly acceded to the request to open the exhibition, being convinced of the advantages of such meetings for the promotion of branches of manufacture to which those present were devoting their energies and their lives. Consequently, he was greatly pleased to welcome delegates from so many countries, engaged in amicable rivalry.

Paraphrasing the old saying that "every dog has his day," he expressed the opinion that rubber is having, and will continue to have, its day. The latter half of the nineteenth century was essentially the gold mining era, but he thought that rubber, found in trees in Africa, Asia and South America, and one variety of which has been introduced with such marked success into Ceylon, the Malay States, the Straits Settlements, etc., would in the future prove to be as profitable as the golden mineral. While denying any personal interest in rubber shares, he felt that a boom in some department of industry would be very welcome; so why not another in rubber?

After tracing the history of plantation rubber from its well-known sources to the record exports of 1913, His Royal Highness alluded to the fall in prices as having been caused by the enormous production being in excess of immediate requirements. Hence the reason of this exhibition, to show the variety of uses to which rubber could be applied, thus offering a vast, untrodden field for future commercial enterprise.

ception was a lecture on the Belgian Congo, delivered by M. Ed. Leplae, general director of the agricultural department, Colonial office, Brussels. M. Leplae, whose remarks were illustrated by moving pictures, spoke of the climate and product of the Congo, and said that rubber planting would doubtless always prove a profitable investment.

EXHIBITORS AND DELEGATES VISIT BRIGHTON

A most charming innovation was the visit on Sunday, June 28, of exhibitors and delegates to Brighton. The party assembled at Victoria Station and took a special Pullman train at 10:25, which arrived at its destination an hour later. On arrival at Brighton the rubber tourists proceeded to the water front (which indicated that they were waterproof) and there disported themselves in the buoyant manner known only to genuine rubber men.

lowed by speeches on the part of a number of others prominent in the gathering and oratory prevailed until train time, when a highly complacent rubber party entrained for London, thus concluding a most joyous occasion.

The visit of Princess Marie Louise to the exhibition on Monday, June 29, was an occasion of general interest. Her Royal Highness was intensely interested in the general display, and so expressed herself before leaving.

Ceylon, which has always been a prominent factor in the various rubber exhibitions, and which has always offered one of the most attractive exhibits at each of the shows, gave a delightful "at home," which was largely attended and proved to be one of the smartest functions at the exhibition. The guests were received by Mr. R. N. Lyne, the Commissioner of



INTERNATIONAL RUBBER BANQUET. PRINCES' RESTAURANT, LONDON, JULY 7, 1914. HELD IN CONNECTION WITH THE FOURTH INTERNATIONAL AND ALLIED INDUSTRIES EXHIBITION.

A delightful luncheon at the Hotel Metropole concluded the festivities of the early part of the day, after which the different members of the party spent the afternoon according to their several ideas, many of them taking the motor ride through Brighton and adjacent territory, which, by the way, constituted part of the program accessible to all who might wish to avail themselves of it. The dinner, which occurred at 7 o'clock at the Metropole, and at which the Mayor of Brighton was the guest of the evening, was a very pleasant function and His Worship, most felicitously introduced by Sir Henry Blake, spoke in a facetious and interesting vein. He said in effect that while Brighton did not afford any enterprise that might come under the generally accepted conception of industry, yet it was the province of that most delightful resort to restore to their normal condition minds which had been surfeited and bodies which had been jaded with too much industry, and that he felt in doing this work Brighton was effecting a most worthy and beneficial purpose.

The Mayor's remarks, received with great applause, were fol-

Ceylon, who also represented the Chamber of Commerce and the Planters' Association. Many prominent Londoners were among the guests.

MR. MANDERS GETS A GOLD MEDAL.

One of the happiest events of the 1914 exhibition was the banquet and presentation to Mr. A. Staines Manders of a gold medal, suitably inscribed, which was the gift of the French section. The dinner was held at the Café Royal and many laudatory things were said in reference to the guest of the evening "to whose genius and indefatigable effort was due the magnificent assembling of rubber and allied products from all parts of the world, and whose unvarying courtesy and fertility in resource so promoted the convenience and happiness of exhibitors."

THE RUBBER CONGRESS AND THE PAPERS READ.

One of the most important events of the exposition was the opening of the Fourth International Congress by Sir Henry Blake, on the morning of the 30th, and these meetings were

continued daily until Tuesday, July 7. Forty-one papers on a wide variety of subjects pertaining to the rubber industry and prepared by experts from every rubber country in the world, including manufacturing as well as rubber producing countries, were presented at this conference. It was hardly possible within the time limits to have all these papers read and discussed, but the following twenty-seven were read and considered during the sessions:

SECTION I.

DESCRIPTIVE, HISTORICAL AND GENERAL.

"Kelantan as a Rubber Producer."—By Mr. T. Clifton Hutchings.

SECTION II.

CULTIVATION AND BOTANICAL.

"Rubber in Cochin-China."—By M. Cremazy, of Indo-China.

"The Best and Most Economical Methods of Tapping."—By Mr. W. F. de B. Maclaren.

"The Physiology of Latex Formation in *Hevea*."—By Mr. R. H. Lock, Sc.D.

"A Comparison Between Wild and Plantation Grown Rubber."—By Mr. A. Irving.

"Manuring of Rubber."—By Mr. H. Hamel Smith.

"The Cultivation of the Rubber Vine in Central Africa."—By Dr. E. de Wildeman, Jardin Botanique de l'Etat, Brussels.

"The Systematic Study of Rubber Production."—By Mr. R. N. Lyne, F.L.S., F.R.G.S., Director of Agriculture, Peradeniya, Ceylon.

SECTION III.

COMMERCIAL, STATISTICAL AND FINANCIAL.

"Some Aspects of Plantation Rubber."—By Mr. E. L. Killick.

SECTION IV.

RUBBER PREPARATION.

"The Coagulation of Rubber Latex."—By Mr. N. W. Barritt, B.A., International Institute of Agriculture, Rome.

"The Chemical Coagulation of Rubber Latex."—By Mr. Fredrick Kaye, A.R.C.Sc.

"The Depolymerization of Rubber (Chemical Study of Raw Rubber)."—By Mr. A. van Rossem, Delft.

"The Vulcanization of Rubber by Ultra-Violet Rays."—By M. G. Bernstein, in conjunction with M. Helbronner (but separate paper).

"Contribution to the Study of Rubber Solutions Vulcanized by Ultra-Violet Rays."—By M. Helbronner, in conjunction with M. G. Bernstein (but separate paper).

"The Kinetics of Vulcanization."—Mr. Herbert Skellon.

SECTION V.

RUBBER PROPERTIES AND TESTING.

"Variability."—By Dr. Philip Schidrowitz.

"The Proteids in Rubber and in Rubber Latex."—By Dr. Fritz Frank.

"The Advantages and Defects of Plantation Rubber."—By Mr. W. A. Williams, General Works Superintendent, North British Rubber Co.

"American Methods of Testing Mechanical Rubber Goods."—By Mr. D. E. Douty, United States Conditioning & Testing Co.

"Some Experiments on the Direct Determination of Mineral Matter in Rubber Mixings."—By Messrs. B. D. Porritt, B.Sc., F.I.C., Chief Chemist, and R. Wheatley, B.Sc., A.I.C., Research Chemist, North British Rubber Co., Ltd.

"Determination of Bitumen in Rubber Mixings."—By Mr. B. D. Porritt and Mr. E. Anderson, Assistant Chemist, North British Rubber Co., Ltd.

"The Influence of Temperature on the Physical Properties of Rubber."—By Mr. P. L. Wormley, United States Bureau of Standards, Washington.

SECTION VI.

LABOR AND ORGANIZATION.

"Bonus Schemes for Managers and Assistants on Plantation Rubber Estates."—By Mr. P. J. Burgess.

SECTION VII.

RUBBER MANUFACTURE

"Effects of Acids and Alkali in Rubbers, More Especially in Relation to Reclaimed Rubbers."—By Mr. W. G. Martin, Experimental Dept., North British Rubber Co., Ltd.

"On Rubbered Balloon Fabrics."—By Mr. Guy Barr, B.A., B.Sc., National Physical Laboratory, Teddington.

"Synthetic Rubber; Researches into the Commercial Preparation of Isoprene."—By M. Gaston Chardet.

"Plastides Derived from Oil Oxides."—By M. Gaston Chardet.

OTHER SOCIAL FEATURES.

French Day (Tuesday, June 30) was the occasion of the official Government reception and the visit of M. Paul Cambon, French Ambassador to England, to the exhibition. His Excellency was received by a number of commissioners and delegates, including Prof. Perrot and Dr. Gatin, secretary of the French section. M. Cambon congratulated the commissioners in charge of the French section on their exceedingly effective display.

Perhaps the most brilliant of the receptions was that given by the Rubber Growers' Association on the evening of June 30, to which the entire floor and balcony of the hall were devoted. The guests were received at the entrance to the main hall and a great majority of them after a general inspection of the attractions offered, repaired to the tennis court and listened to an attractive program of English folk songs; after which they adjourned to the balcony, where a sumptuous collation awaited them, and were further entertained during the evening by the Royal Artillery Band.

Another very successful event was the dinner given by the West India Committee on July 1, at the Royal Agricultural Hall, at which Sir Ernest Shackleton was the guest of honor. After the loyal toasts had been duly drunk the chairman proposed the health of Sir Ernest Shackleton and success to his expedition.

The reception by the State of São Paulo including a moving picture exploitation showing a number of scenes reflecting agricultural conditions in this section, was very much enjoyed. To individualize any particular reception in São Paulo section is rather difficult, as it was the scene of a continuous succession of receptions, inasmuch as it was persistently active in the serving of a delicious brand of coffee peculiar to the São Paulo district.

A reception of the Sudan government commissioners was held on Thursday, July 2, and an illustrated address on the Sudan was given by Mr. William Herbert Garrison, after which a tea was served.

THE BIG BANQUET

The Fourth International Rubber Banquet was held on the evening of Tuesday, July 7, at Princes' Hall restaurant, Piccadilly, W., and was the concluding event of the social features incidental to the exhibition. After the customary loyal toasts Sir Henry Blake, the chairman, gave an exhaustive resume of the purpose and scope of the exhibition, incidentally paying a tribute to the effective work of the delegates to whose energy and capacity was largely due the opening of the exhibition in every way complete at the appointed hour. The responses to these remarks were made by Prof. Perrot, M. Leplae, and Mr. O. W. Barrett. In proposing the toast of the International Rubber Exhibition, Mr. Arthur Lampard alluded to the fact that the exhibition was responsible for the cementing of international friendships. One of the most effective speeches was made by Mr. Alex. Johnson on behalf of manufactured rubber, and his remarks were exceedingly well based and received with great applause. Mr. F. Pegler responded also for manufactured rubber and was well received. Among the other prominent speakers were Mr. Norman W. Grieve, who proposed the toast "Success to the Rubber Industry," to which responses were made by Mr. J. A. Mendes, of Pará, and Mr. Cyril Baxendale, vice-

chairman Fourth International Rubber Congress. The toast—"The Press"—proposed by Mr. John McEwan, chairman of the Rubber Growers' Association, and that of—"The Chairman"—by Mr. R. N. Lyne, director of agriculture, Ceylon, concluded the banquet.

AWARD OF PRIZES.

As has been mentioned several times in the columns of THE INDIA RUBBER WORLD, a large number of prizes was to be awarded in various competitions at the London exhibition. Including all the prizes—vases, cups, medals (gold, silver and bronze), cash prizes and certificates—there were forty-two awards. Below is given in tabulated form the award of first prizes in the different competitions in the various groups:

COMPETITION I—GOLD MEDAL.

Class I.—Crêpe: Balgownie Rubber Estates, Ltd., Kajang, Selangor, F. M. S., and Kintyre Tea Estates Co., Ltd., Ceylon.

Class II.—Smoked Sheet: Highlands & Lowlands Pará Rubber Co., Ltd., Port Swettenham, F. M. S.

Class III.—Assortment of No. 1 Rubber in Scrap Grades: Highlands & Lowlands Pará Rubber Co., Ltd., Port Swettenham, F. M. S.

COMPETITION II—GOLD MEDAL.

For the best exhibit connected with plantation rubber grown in the Middle East. Ceylon, and British Malaya.

COMPETITION III—GOLD MEDAL.

No award.

COMPETITION IV—GOLD MEDAL.

For the three best exhibits of rubber flooring in tile or sheet form; open to manufacturers of any country. North British Rubber Co., Ltd.

COMPETITION V—GOLD MEDAL.

For the exhibit composed of greatest variety of articles made from rubber for commercial purposes; open to manufacturers of any country. Leyland & Birmingham Rubber Co., Ltd.

COMPETITION VI—£50 AND A GOLD MEDAL.

Such new use for plantation rubber as may be adjudged the most valuable; with special consideration of the weight of rubber likely to be consumed. Morland M. Dessau.

COMPETITION VI-A—GOLD MEDAL.

Class 1.—For the most efficient hand-sprayer, ordinary type. Four Oaks Spraying Machine Co., Sutton Coldfield, near Birmingham.

Class 2.—For the most efficient hand-sprayer, knapsack type. W. Weeks & Sons, Ltd., Maidstone, Kent.

COMPETITION VII.

For the most efficient power-sprayer. W. Weeks & Sons, Ltd., Maidstone, Kent.

(Competitions I. to VII. were organized by the Rubber Growers' Association.)

GUMMI-ZEITUNG COMPETITION—SILVER VASE.

For the best design for laying out a factory for the manufacture of rubber goods. Georg Gelbert, Foreman, Stein Strasse 3, Berlin, O. (Prakticus.)

GUMMIWELT COMPETITION—GOLD MEDAL.

For the best rubber manufacturing machine of German manufacture. Harburger Eisen und Bronzwerke, Harburg a/ Elbe, Germany.

INDIA RUBBER JOURNAL COMPETITION—£25 CASH.

Ideal Rubber Estate Competition. Leonard Smith, Kapar, Selangor, F. M. S.

Rubber Estate Photographs. H. F. Macmillan, Department of Agriculture, Peradeniya, Ceylon.

PRINCIPAL EXHIBITS.

CEYLON.

As in all the preceding exhibitions, Ceylon made a creditable and very instructive showing, the character of which is reflected

in the winning of the gold medal of the exhibition—an honor, by the way, which was also accorded to the Malay States. The handsome pavilion and the very artistic display of various types of plantation rubbers all went to make up a most effective picture. It is only necessary to mention the names of the working committee in London—Sir Edward Rosling, J. L. Loudoun-Shand, F. Crosbie Roles, C. O. Macadam, and W. M. Leake—to indicate the character of this exhibit.

BELGIUM.

Numberless pages might be devoted to this exhibit without approach to justice in the description. It is doubtful if anything more beautiful, more comprehensive in its character or more informing generally than this Belgian exhibit has ever been seen



THE BELGIAN EXHIBIT AT THE LONDON EXHIBITION.

at a commercial show. Everything dealing with the production and preparation of rubber in the Belgian Congo was exploited in a manner at once simple and effective. Perhaps some idea of its size may be conveyed to those who have visited Agricultural Hall by the statement that this Belgian exhibit filled the entire entrance as well as King George's Hall; and possibly the picture here shown may afford some slight idea of its character. The gentleman directly in charge of this exhibit was Captain Commandant Leon Osterrieth, commissioner-delegate to the Fourth International Rubber Exhibition.

FRANCE.

The French exhibit, in charge of Dr. C. L. Gatin, like that of Belgium and a number of others, was a magnificent display, showing the wonderful possibilities of France and her colonies in connection with rubber and allied products. In the case of France, as in that of Belgium and various other mammoth governmental displays, the general classification "French Exhibit" included numberless smaller exhibits which reflected the greatest possible credit on both the nation and its representative in charge of the exhibit.

STATE OF AMAZONAS.

The prominent feature of this fine display was its remarkable showing of "Fine Hard," in large biscuits, which excited the admiration both of members of the industry and of the casual visitor knowing little or nothing about rubber. This exhibit occupied a large space and received a great deal of attention.

BRITISH GUIANA.

The nature and extent of the specimens of native product shown by British Guiana should do much to promote interest in the industries of that colony. The exhibit included, besides rubber and balata, which constitutes an important industry in the colony, a wide range of other indigenous products, all effectively displayed.

THE RUBBER GROWERS' ASSOCIATION.

This organisation occupied a large portion of one of the galleries and made a most comprehensive and attractive display



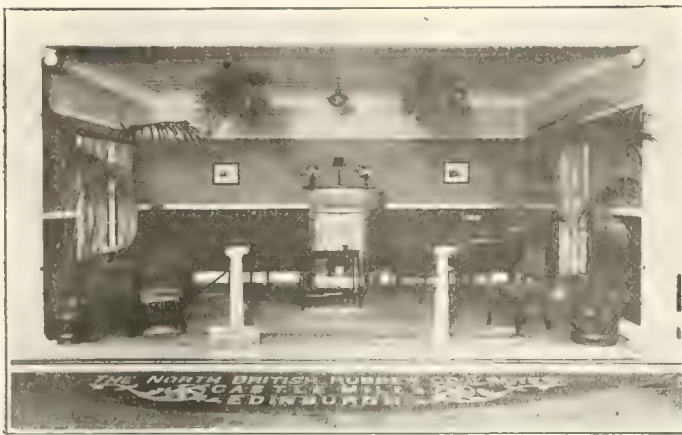
SECTION OF RUBBER GROWERS' ASSOCIATION EXHIBIT.

of crude rubbers. There were a number of sub-exhibits indicating new uses for rubber, among them the Dessau roadway.

THE NORTH BRITISH RUBBER CO.

The North British Rubber Co., Ltd., of Castle Mills, Edinburgh, had perhaps the most effective and elaborate display among the commercial exhibits. The *pièce de résistance* was the famous rubber room, the entire contents of which, including the office table, were made of rubber; and the general effect was altogether fine. On entrance the visitor was asked to write his name in the rubber-covered guest book, with a rubber pen, the ink being supplied from a rubber inkwell, so that it was quite natural one should feel himself in a highly resilient atmosphere.

The tiling exhibit, in King George's Hall, was another artistic and industrial triumph for this very enterprising company. One phase of this particular exhibit testifying to the quality of North British rubber product was a stair tread which had been sub-



THE FAMOUS RUBBER ROOM.

jected to 24 years' wear without showing any appreciable damage. There was also a gallery exhibit of a rubber roadway manufactured and laid by this company.

FOUR OAKS SPRAYING MACHINE CO.

This company manufactures spraying machines and spraying apparatus of every description, its works being located at Sutton Coldfield, Birmingham. Upon this stand were shown a variety of types of spraying machines especially adapted to rubber plantation work and to be found today upon all the principal plantations. One of the prominent types is the "Four Oaks Gold Medal Copper Knapsack Sprayer No. 101," which has been particularly designed for use in tropical countries. It is made without rubber valves and with a powerful brass pump, with

brass ball valve, which, being outside the container, is always easily accessible. This particular type is very popular with planters everywhere, but it is only one of many made by the company. The demonstration given in Agricultural Hall proved the effective work done by this type of sprayer to the satisfaction of all who witnessed it.

NORTH WESTERN RUBBER CO.

This stand, representing the interests of one of the most important concerns of its kind, was characteristically modest in its display, though an effective line of samples and charming hospitality greeted the visitor. The stand was in charge of the general manager, Mr. Ernest E. Buckleton, well known to the rubber world, and of Dr. Torrey, the chairman, by the way, of the conferences, and a recognised authority on all matters pertaining to the production of reclaimed rubber.

THE LEYLAND & BIRMINGHAM EXHIBIT.

The Leyland & Birmingham Rubber Co., Ltd., with works in Leyland and Glasgow and a London warehouse in Aldgate, E. C., made an exceedingly fine showing of mechanicals, tires and drug sundries and an especially fine exhibit of tiling, in the manufac-



THE RUBBER TENNIS COURT.

ture of which they are expert. The new rubber golf tee mat was viewed with unusual interest, particularly by the English contingent, who form a community of golfers.

The rubber tennis court, one of the greatest novelties of modern rubber production, shared honors with the rubber room. This court was the subject of much speculation on the part of players, who were inclined to assume that it would be unusually fast, but experience proved that if anything it afforded rather a slower game than the ordinary lawn game. The general effect was very artistic, the rubber flooring surrounded by "bleachers" being most pleasing to the eye.

WOOD-MILNE, LTD.

This stand was one of the busiest in the show, because of the general interest in "Pavea," offered as synthetic rubber. The samples were examined by large numbers of people and generally conceded to be excellent. The company also showed a general line of tires and motor goods.

THE CONTINENTAL CAOUTCHOUC & GUTTA-PERCHA CO.

The home of this great company is Hanover, Germany. Its exhibit reflected the important character of the house. It included Continental lawn tennis balls and Continental football bladders, in Rugby and Association shapes, as well as the "Contirex" bladders made with patent air valves, all of which attracted much attention. A substantial type of cotton-braided hose, jar rings, solid and insertion sheeting, drug sundries, waterproofs,

passages and aeroplane and balloon tires were all shown. The company could not display its famous line of tires because of its agreement with the Motor Association.

HARTFORD AND ATLANTA INDIA RUBBER WORKS

One of the most complete and interesting displays of rubber merchandise was made by this company, whose exhibit—the subject of a great many favorable comments—included rubber footwear adapted for various purposes, automobile accessories, various types of tires, technical articles, waterproof fabrics for clothing and other purposes, as well as fabrics for balloons, aeroplanes, etc. The stand was artistically arranged and the color scheme afforded by the varied product and its tasteful arrangement made a most pleasing exhibit.

THE UNITED STATES RUBBER RECLAIMING CO.

This company, with factories in Buffalo, New York, and executive offices in New York City, had an elaborate reproduction of its exhibit at the 1912 show in New York. This stand was a center of general interest, its visitors representing a large buying element from all over the world. The testing plant, in charge of Louis D. Plum, the chief chemist of the company, demonstrated, among other things, that this product was one adapted for insulating purposes, sustaining successfully a test



UNITED STATES RUBBER RECLAIMING CO.'S BOOTH

of 45,000 volts. The tensile strength of the various types of reclaimed rubber made by the company was manifested by a motor-driven testing machine made by the Hartford Special Machine Co. for the purpose, all the different grades subjected to this strenuous trial having "made good" without exception. The stand was in charge of Mr. Clarence H. Loewenthal, secretary of the company, and Mr. Louis D. Plum, its chief chemist.

THE PIERCE WRAPPING MACHINES

The Pierce Wrapping Machine Co., of Chicago, Illinois, exhibited its various types of tire-wrapping machines, the capabilities of which were demonstrated by Mr. Pierce, himself, who was in charge of the stand. This company also showed its wire-wrapping machine. The *modus operandi* of these Pierce devices is generally known to rubber manufacturers in the United States. This very economical and durable method of wrapping is effected by doubling the edge of the paper as it is applied and the wrapping of an adhesive band around the tire in cross relation to the spiral wrapping. It is easily applied, and removed with equal facility. These machines are thoroughly protected by patents.

STANDARD EMAREX CO.

This company had an exhibit which reflected the many excellences of "Emarex." Needless to say this most effective showing was the work of that well known dispenser of "Emarex," Mr. George Watkinson, whose indefatigable and highly successful efforts in the popularizing and sales promotion of this brand

reclaimed rubber is really a creditable chapter in rubber trade history. Of course the dominating factor of the display was the famous "drums" which led this celebrated product into foreign

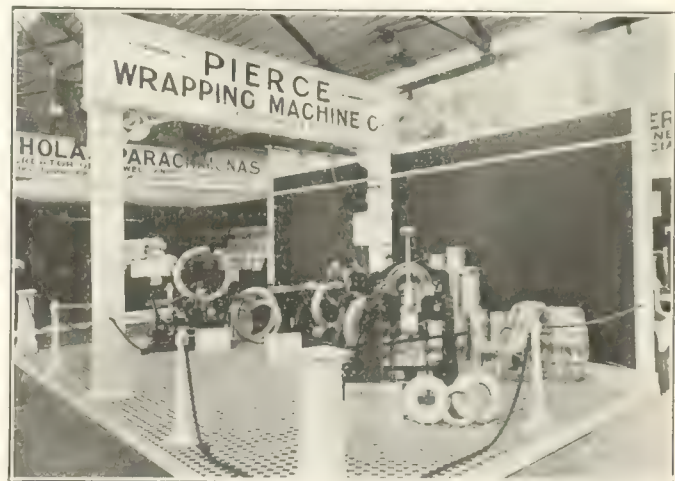


STANDARD EMAREX CO.'S BOOTH

but now friendly lands and which, incidentally, completely routed the enemy. Messrs. Lange, Beahan & Co., the present European agents for "Emarex," assisted Mr. Watkinson in handling the stand and interviewing its numberless visitors. This was the only mineral rubber concern which made an exhibit.

John Lang, Ltd., whose stand was always surrounded by interested visitors, exhibited the product of the Prowodnik company, of Riga, which makes a popular reclaimed rubber. Mr. Lang is the sole sales agent of the Prowodnik company and he has extensive connections all over the world.

The Dunlop Rubber Co., Ltd., showed various types of Dunlop solid tires, golf balls and shoe findings. These Dunlop golf



PIERCE WRAPPING MACHINE CO.'S BOOTH

balls are especially dear to the heart of the British golfer and are rapidly finding their way into the affections of the general golfing world.

The Hood Rubber Co., Ltd., which is the English branch of the Hood Rubber Co., of Boston, Massachusetts, exhibited a complete line of their famous footwear. Their new brand of "Bullseye" rubber boots, made for mill and factory purposes, attracted a great deal of attention.

The well-known Italian house of Pirelli, Ltd., displayed most effectively various lines under the general classification of tires, technical and mechanical goods, athletic goods, drug sundries and traveling requisites.

Louis Schopper made a most interesting showing of his rubber

testing devices. He probably had as many visitors as the great majority of the stands, and it was quite manifest that most of them were interested in his product. It was generally conceded that Mr. Schopper was one of the busiest men at the show.

Lehmann & Voss, of Hamburg, Germany, showed an extensive and interesting line of compounding ingredients, well known and extensively used both on this side of the water and in the United States.

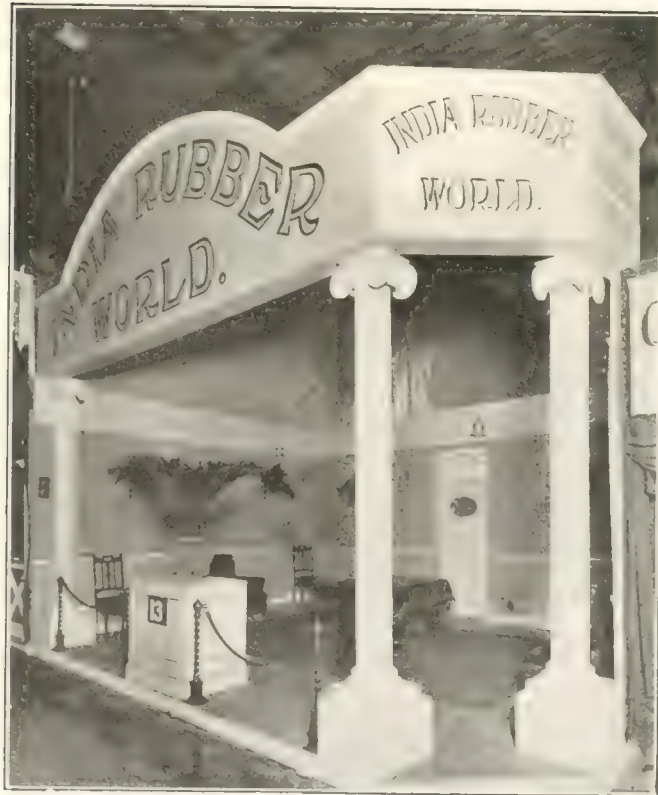
The Pulsometer Engineering Co., Ltd., exhibited its "Normair" rubber drying plant, the special feature of which is drying the rubber at low temperature—claimed to be a safe and economical method.

What is known as the hard cure process, an invention of Mr. H. A. Wickham, was the subject of much attention and interest at the show. Mr. Wickham's process deals with the treatment of latex by the application of antiseptic smoke and heat. It is claimed to be a most convenient method and to economize both time and cost, exerting at the same time a standardizing effect on the grades. Sample blocks of rubber treated by this process were shown and favorably commented upon.

There were a number of interesting processes of curing rubber, including those of Dr. Pinto, and the Byrne Process.

Dr. Pinto's exhibit, located in the gallery, was among those that attracted unusual attention. The Pinto process, it is claimed, is a rapid coagulant, free from acids. A number of articles were shown that had been produced from rubber made by this process.

David Moseley & Sons, with works at Ardwick, Manchester, and offices in London, had an effective display of tires made from plantation rubber.



Entrance to THE INDIA RUBBER WORLD

RUBBER EXHIBITION NOTES.

NORTH BRITISH COMPANY GETS TROPHY FOR BEST EXHIBIT.

THE North British Rubber Co., Ltd., of Edinburgh, was awarded the President's Trophy at the Fourth International Exhibition at London for the best exhibit of any kind. It also was awarded the gold medal for its display of tiling. The most

notable exhibit made by this company was a rubber room, in which the whole setting of the room, and practically every article of furniture in it, were made of rubber.

There was a particularly fine series of pictures dealing with the factory life of the North British company, and the gathering of rubber, etc., in British Malaya. There were also films of the São Paulo Coffee Plantation, in addition to some very excellent views of the Congo.

The actual number of British and Foreign governments which exhibited at the show was 54.

Among the well known American visitors to the exhibition were: Mr. George B. Hodgman, president of the Hodgman Rubber Co., New York; Mr. Frederic Hood, president of the Hood Rubber Co., Boston; Mr. J. H. McLean, of the Pequannoc Rubber Co., Butler, New Jersey; Mr. James T. Johnstone, of Johnstone & Whitworth, crude rubber importers, New York, and Mr. C. E. Douty, of the United States Conditioning Co., New York.

REPRESENTATION BY THE STATE OF PARÁ.

The following cable was sent from London to the "Folha do Norte," Pará, on June 26:

"The exhibit of Pará products has met with evident success at the Exhibition of Rubber and Tropical Products at the Royal Agricultural Hall. The managing committee, keeping in view the efforts made by the government and commerce of Pará, is surrounding the Pará delegates with every distinction, giving Pará precedence at the festivities."

These delegates were: Senhores Emilio Martins, secretary of commerce; Amando Mendes, secretary of the Pará Commercial Association, and Dr. Souza Castro. The municipality of Belem was represented by Dr. Bento Miranda and Colonel Raymundo Brazil, while the delegates from Itaituba were Dr. Theodore Braga and Dr. Jayme Abreu.

On the second day, considered as the "Pará Day," there took place at the stand a sympathetic meeting, presided over by the Brazilian minister and Dr. José Carlos Rodrigues, Brazilian Consul General in London; all acting specially on behalf of Dr. Eneas Martins, governor of the State of Pará. Among those present were Sir Henry Blake, president general of the exhibition, and a large committee, the staff of the Brazilian Consulate, and a large number of Brazilians and persons of other nationalities.

The display of Pará products, though modest in comparison with those of São Paulo and other sections, aroused interest for the variety of the exhibits and their artistic arrangement.

A PLEASANT COMPLIMENT FOR THE SECRETARY, MISS FULTON.

One of the closing incidents of the rubber show, and an exceedingly pleasant and popular one, was the presentation to Miss D. Fulton, the very efficient and charming secretary of the exhibition, of a diamond ring, by the exhibitors and delegates, in order that they might in some small degree testify their appreciation of the uniformly courteous and helpful manner shown toward all by this lady. Sir Henry Blake, the president of the exhibition, occupied the chair, and on behalf of the committee representing governments and exhibitors, Dr. Argollo Ferrao made the presentation speech, while Dr. Carlos Pinto made the actual presentation by placing the ring on the lady's finger. The recipient made a brief and feeling response.

TWO TIRES THAT RAN OVER 9,000 MILES.

The Overman Tire Co., of New York City, recently received a letter from a man who had used two of their tires on the rear wheels of his 50 h. p. Simplex. He wrote them that one of these tires had served him for 9,100 miles and the other for 9,200 miles before he found it necessary to replace them. As this was a phenomenal record for any sort of tires, the Overman company secured the tires and photographed them and has used them effectively in its newspaper display advertising.

Britain's Tropical Gardens and What They Have Done.

BOTANY, in its original meaning, was a discourse on fodder and the first botanical gardens were, no doubt, planted with strictly utilitarian aims. The first were for utility, the second for beauty and then came those intended to serve the cause of knowledge. Finally these objects were combined in the gardens of the experiment stations of the modern state. The "herbal gardens" of the middle ages, which were the immediate precursors of the botanical gardens of the present day, were planted with medicinal herbs, but in many instances the grower probably was moved more by a desire to know and possess many curious plants. Scholars who had a special liking for the study of plants went from one of these gardens to another and wrote down in horrible Dog-Latin descriptions of what they found. These manuscripts were collected, underwent redactions, and lists of plants found in "herbal gardens" were made. From these lists ambitious owners planned new gardens, new lists were made and thus the sciences of gardening and of botany developed as the years went by.

From one of those old "medicine gardens" dates the beginning of the wonderful establishment at Kew, England, which every amateur botanist in the world dreams of some day visiting. Slowly developing under successive owners through several centuries, the estate was leased as a residence by the unfortunate

Frederic, Prince of Wales, and here his widow reared her son, who afterward, as George the Third, had an interesting difference of opinion with his American subjects on matters of taxation and kingly rights. That monarch obtained the freehold, enlarged the grounds and continued the improvements made by his parents. In 1840 the Royal Botanic Gardens, as they had come to be called, became definitely a public institution, which remains today the most important botanical establishment in the world. It has had associated with its conduct the immortal names of Hooker and Bentham, and it has added to botanical science a fund of knowledge which may never be equaled until there is another world to explore.

But Kew is more than grounds, gardens, collections and treatises. It is a great institution for the study of plants from every possible angle, their relationships, their habitats, industrial importance, climatic and soil requirements, their diseases and a hundred other matters. It is a world institution, not only having correspondence with learned bodies and individuals everywhere, but having what are practically branches in the shape of botanical gardens, forest observatories and experiment stations in all parts of the British empire.

This work was given great impetus by Sir William Turner

Thistleton-Dyer, who was director of Kew from 1875 until 1905, when he became Botanical Advisor of the Colonial Office. Under his influence the usefulness of Kew to all mankind has been strikingly increased. A sound economist and man of imagination and breadth of view, as well as a thorough scientist, he saw that the problem of tropical production was not merely to make money for exploiters, but to furnish the products in abundance and at reasonable cost to those who had need for them. To do this meant that the right plants must be grown in the right localities by the right methods. The natives, on whose efforts the success of plantations depended, could be interested only by remuneration which would distinctly raise their standard of living, and this could be given only where right methods of crop-selection and culture were followed. To this humane and broad-minded policy the botanical work of the empire was definitely committed. The survey swept the world. If a plant had beauty or utility the question of its culture and extension was considered.

No dictum derived from empirical knowledge stood in the way of a candid examination of any problem presented. To find the plant, then find the way to make its culture profitable, was the work to which Kew and its allies addressed themselves; and the results have been of incalculable benefit to the world.

The Botanical Gardens of Peradeniya, in

Ceylon, have been declared the finest in the world. They are nearly a century old, having been established in 1821. The grounds are bounded on three sides by the river Mohaweliganga and are only four miles from the historically interesting town which bears the alluring name of Kandy. For a hundred years high talent, devoted enthusiasm and deep scientific knowledge have been given to the work of making these wonderful gardens. The same patient and skilful effort would have wrought wonders in Greenland, but under a tropic sun the result has been magnificent beyond description.

The Mohammedans believe that the Garden of Eden was located in Ceylon, and there is no doubt that the gardens of Peradeniya have made a finer representation of that ideal spot than imagination could ever depict. The beauties, the marvels of the vegetable world, the delightful fruit, the healing herb, all are there—and there is no angel with flaming sword to turn the visitor away. Avenues of lofty palms, wonderful lianas, giant bamboos and all those miracles of the vegetable world which loom so large in travelers' tales are here assembled for the visitor's delight. There are flowers of marvelous beauty and, as in the Garden of old, "every tree that is pleasant to the sight and good for food." There, too, is the tree of the fruit of



THE WINTER GARDEN AT KEW GARDENS, LONDON

which it must still be world supply. It is the upas tree of Java.

This bewildering assemblage of beauty and marvel would well justify its existence if it served no further purpose than the information and delight of the visitor. But for the benefit of the grouchy utilitarian it may be said that they have added many millions (now we have him interested) to the wealth of the world and there is scarce a household in civilized lands to which their benefits have not penetrated. Tea was imported into Ceylon for a thousand years. No doubt small, unsuccessful and forgotten attempts at its culture were made, but not until Peradeniya, by scientific and careful experiment, had shown the way, was the tea plant more than a curiosity. In 1875 a little less than three hundred pounds were exported. Now the production is two hundred million, twice the amount consumed in the whole United States. How much this means to the planters in Ceylon and the patient, humble workers of that land may be partly appreciated, but what it means to the millions of tea drinkers of the world, particularly among the poor, is beyond human computation.

The cultivation of cinchona is another illustration of what the botanic stations may accomplish. In the late seventies the culture had begun, but the commercial supplies still came from the bark of wild trees, harvested by the usual destructive methods. Supplies of quinine sold for ninety dollars a pound and people sickened and died because they could not pay the price. Now thousands of tons of the life-saving bark come from plantations of the east and the drug can be purchased at retail in New York for thirty-five cents an ounce.

But it is with the production of rubber that the most commercially important work of the botanic stations of Ceylon, Singapore and the east generally has been concerned. In showing how recent is the cultivation of rubber-producing plants perhaps the most impressive fact which may be cited is that in De Candolle's "Origin of Cultivated Plants," revision of 1884, not a single rubber plant was considered worthy of mention in the list of 247 species, though careful attention and exhaustive details were given in the case of such staples as skirret, rampion, quinoa, fenugreek, alexanders, sweet-sop, sour-sop and gold-of-pleasure. Ten years later saw the world unconvinced. Rubber importers scoffed. The forests were inexhaustible. Consumption would never catch up with supply. Reputable writers, scientists and practical rubber men declared that rubber plantations were an economic failure. Misguided planters peevishly cut down their trees, replacing them with other crops, and this fact was trumpeted to the world. But the patient, clear-headed men at the experiment stations went on with their work. With sure and large vision they saw the enormous magnitude of the prize for which they were contending—not for themselves, but for their country and the world. They sent to America for plants—*Hevea*, *Castilloa*, *Manihot*. Foolish men! exclaimed the critics. Do they not know that those trees will not grow outside of their original habitat?

It seems that the foolish men at the botanic stations did not know anything of the kind. They went on planting, cultivating, tapping and testing, distributing trees and plants, until now thirty-eight years after the first trees were planted, a million and a half acres are set with the trees which "would not grow," and the product of the Malay States plantations alone is greater than was the whole world's production of rubber at the time the first experiments were being made. It seems certain that within a very few years the plantations of the east will furnish by far the largest part of the world's rubber supply.

Such has been the work of a few men of intelligence, imagination, conscience and energy, working mostly for salaries less than that of the chief cook in a modern hotel. While their critics were giving dire reasons why it never could be done these men were learning the requirements of the plant, placing it under

the right sky, in the right soil and at the right elevation; they were testing every possible mode of culture and recording the results, noting failures as calmly as they noted successes; applying the science of chemistry to the product, making and testing the goods the world would want. They are still at their tasks in their quiet laboratories and gardens, still adding to the world's knowledge and the world's wealth and training the clear-eyed and clear-brained young men who are to come after them; while their erstwhile critics in far off lands are riding above tires made from the rubber they declared could never be grown.

If we consider the condition which the world would be facing if its supply of this indispensable article rested with those in control of the native forests; when we think of how the concessionaires would be calling for their pound of flesh and on second thought declaring that they must have two pounds; of the governments planning for more and more revenue and concocting schemes of monopoly and "valorization"; when we think of the continued destruction without replacement and a narrowing supply in the face of a growing demand, we realize something of what is due to the modest scientists who made possible the supply which stands between the manufacturers and the certain famine which would now be at hand.

In every land the policy of the stations is adapted to the facts which must be faced. In some parts of Africa the easygoing natives could never be induced to undertake plantations, and here they are skilfully persuaded to make each for himself a small planting in the forest near his own hut. They are taught less destructive methods of tapping; they are protected from exploitation and encouraged to become regular producers who will be more and more efficient as the years go by. All over the world the combined resources, learning and effort of the botanic establishments of the British Empire are directed to the task of teaching mankind how to profit in pleasure and wealth from the boundless treasures of the vegetable world. The man who discovers a gold mine does a poor and paltry thing compared with that done by the man who shows how an acre of ground can be made to yield pleasure and wealth for the succeeding generations of all the ages that are to come.

In America the botanic establishments are scattered from Canada to the Falkland Islands. There are twelve in the West Indies, or fourteen if Trinidad and Tobago be so classed. That of Jamaica has been in existence since 1779.

A number of the botanical gardens in the West Indies and Guianas have been described in considerable detail and illustrated by photographs in the accounts contributed to THE INDIA RUBBER WORLD by its editor or published by him in his book on the tropics. All of these botanical gardens, with the experiment stations usually conducted in conjunction with them, are under the management of botanical experts sent out from England, who as a rule are not only men of scientific attainments, but good organizers and well equipped for their varied executive duties. They take a profound interest in their occupation and work with the greatest diligence year after year to achieve substantial results.

In Jamaica there are two notable gardens and an experiment station. They have devoted much attention to rubber-producing trees, the *Heveas*, *Castilloas*, *Sapiums* and their own rubber vine, the *Forsteronia*. There is an interesting garden in Antigua, where a great variety of rubber trees has been tried in an experimental way, the *Manihots* especially having been carefully studied.

In Trinidad there is a wonderful garden and a splendid experiment station. Here are also the oldest and best specimens of *Hevea*, *Castilloa* and *Funtumia* in the West Indies. Tobago, which is really a part of Trinidad, has done much with *Castilloas*. In British Guiana, at Georgetown, there is a notable botanical garden, and many experiments have been tried in the planting of *Hevea*, *Castilloa* and *Sapium*.

The English colonies in the tropics all have extensive experiment stations in practically all of which rubber is studied. They are found not only in the places mentioned above but in other parts of the West Indies and in British Honduras. They have also been established on a liberal scale in Southern India, Ceylon, Federated Malay States, Borneo, Northern Australia, Papua and in other islands. At some of these stations the *Hevea* is the principal subject of research work, while in others, as in Southern India, much attention has been given to the *Ficus*, and other indigenous trees. There are a number of these stations in the British possessions in Africa, where a great deal of painstaking study has been given to the *Landolphia* and *Funtumia* plants.

The interesting feature of all this experimental work in the British tropical possessions is the fact that wherever these stations are situated they all draw their inspiration from the gardens at Kew. They are practically all branches of those great botanical gardens near London. They all look to Kew for advice, instruction and assistance; it is the center that vitalizes all these ramifications. It is a wonderful system, admirably conducted, and has already achieved the most beneficent results, with greater results still to come.

SOCIÉTÉ FINANCIÈRE DES CAOUTCHOUCS.

The report presented to the general meeting of this Belgian company on June 10, shows a total area under inspection of 69,850 acres, planted or in course of being planted. Of this total, about 70 per cent. belongs to the various companies forming the combination, which holds a certain interest in the balance. The plantations are divided into three groups, controlled by the respective agencies, as follows: Federated Malay States, 11 plantations—34,750 acres; Sumatra, 10 plantations—31,250 acres; Java, 3 plantations—3,850 acres. Total 24 plantations—69,850 acres. While the technical inspection is in all cases confided to the company's agents, it is not in all instances accompanied by financial control.

During the past year the technical control of the company's Asiatic business was centralized in Mr. E. B. Skinner, formerly at the head of its Straits agency.

Although the balance of profits for 1913 represents about \$500,000, the board has devoted about \$540,000 to writing off depreciation in the companies' shares and other assets; the difference of about \$20,000 being carried over to new account. The report states that it has been considered the wiser policy not to pay any dividend, but to devote the chief portion of the profits to the total extinction of the above-named depreciation; adding that the sudden fall in rubber could not this year be made up by an increased production. Hence the drop in rubber shares and the consequent depreciation of the company's assets.

Appreciatory reference is made to the late Mr. C. A. Haggemacher, head of the Sumatra agency, who died in the early part of 1914.

While a large proportion of the company's plantations has not yet reached maturity, its holdings include some producing estates—such as: Kuala Lumpur Rubber Co., planted area 5,040 acres, 10 months' production, 984,603 pounds; Federated Malay States Rubber Co., planted area 4,800 acres, 11 months' production, 1,071,865 pounds.

This company's headquarters are at Antwerp; the administrative board including E. Bunge, E. Chenevière, de Lagotellerie, Alfred and Emile Grisar, Herbert Wright, and other prominent rubber men.

The exports of rubber waste from Rotterdam amounted in 1913 to 76,743 tons, an increase of 21,986 tons over the exports of the previous year, when of the 54,757 tons exported 39,545 tons were shipped to the United States.

COWBOYS' "CHAPS" BEING MADE OF RUBBER.

EVERYBODY is familiar, pictorially if not from actual observation, with the general aspect of the great American cowboy, and particularly with that distinctive feature of his dress which consists of a pair of leggings or overalls made of leather



SOUTH AMERICAN COWBOYS IN WOOL COVERED "CHAPS."

or of sheepskin with the wool left on and that reach from the feet to the waist. The cowboy refers to these as "chaps," which is short for "chap-a-re-jos" borrowed from the Mexican.

These "chaps" are a highly essential part of the cowboy's equipment, as without them his clothes would be torn to tatters when he rides through the stiff underbrush. They are worn not only by the cowboys on the American plains, but by the men engaged in herding cattle on the great plains of Mexico, Argentina, Colombia, and practically everywhere else where there are cattle and cowboys to brand them up.

But while these leather or sheepskin "chaps" render highly efficient service in places where the underbrush is dry, obviously they are not very well suited to climates where there is a great deal of rain and where vegetation is continuously wet; and that is the reason that the cowboys of the Colombian lowlands have resorted to "chaps" (though they call them "zamarros") of a different sort, namely, made of rubber covered with fabric on both sides. These, up to the present time, have all been made in England, but as these cloth-covered rubber "chaps" are obviously much better suited than their leather counterpart for work in wet weather, it is very likely that their use will spread wherever there are cows and cowboys; and if they are adopted, as they probably will be, in our own western country, they will naturally be made in American mills.

ALL-PLANTATION TIRES.

It is reported from London, that a number of car owners interested in the rubber industry have been ordering sets of "all plantation" tires. These will be submitted to full and complete tests under the supervision of experts.

The Rubber Club's Annual Midsummer Outing.

THERE is one event in the annals of the Rubber Club of America which is really an Event. While in no way disparaging the handsome way in which the New Yorkers treat the members at the annual midwinter banquet, yet for unadulterated good fellowship, good fun and a general good time, Boston's outing is considered just a little bit ahead—at least by Boston.

The Committee of Arrangements for the outing this year reverted back to first principles. The adoption of a country club grounds as a place of meeting had proved less popular than a trip on the blue ocean, where the tang of the salt air gave to the celebrants that hearty appetite which added so much to the appreciation of a shore dinner with its natural concomitants. Therefore the committee, remembering the hearty welcome accorded the club in former years by the officers of the Coast Artillery stationed at Fort Andrew, decided upon a repetition of the program of several previous outings on Peddock's Island, where the fort is situated.

Of course it would never do to omit the golf tournament as a feature of the outing, and Peddock's is not furnished with golf links. Therefore the enthusiasts of the driver and brassie were invited to a handicap play golf tournament at the Wollaston Golf

There were other participants who, however, did not hand in their cards.

The first three on the above score were declared winners, and suitable prizes were awarded them later in the day.

One o'clock saw a crowd of rubber men, in outing costumes, gathered at Otis Wharf listening to the sustaining strains of the Lynn Cadet Band and waiting with more or less patience for



DEPARTURE FROM FORT ANDREW FOR TRIP TO POINT SHIRLEY.

the command "All aboard." The steamer "Griswold" didn't exactly strain at her hawsers, but she was there ready to receive, with scrubbed decks, the embarking rubber men. Some time allowance was given after the appointed hour of departure for the tardy golfers, and the way some of them dashed down the wharf in automobiles would have meant fines for the chauffeurs had not the police politely turned their heads. Neat red cardboard discs, silver bound, were provided, on which each man wrote his name and thus introduced himself to his fellows.

A sound of whistles, a blast from the band, joyous acclaims from the passengers, and the "Griswold" started on its trip down the harbor with one hundred and fifty men on pleasure bent. The band, which has accompanied every one of the fifteen outings of the club, with Leader S. S. Lurvey, kept up a lively concert during the trip. Below, a light bunch of sandwiches and cold drinks was served, and this department was well patronized, in relays, from the beginning to the end of the trip.

Passing steamers saluted, private yachts dipped their colors and motor boats screamed a welcome to the excursionists.

Arriving at Peddock's Island the commandant was at the wharf



ARRIVAL AT FORT ANDREW WHARF.

Club, near Montclair, a suburb of Boston, on the morning of the day of the outing, one gross and two net prizes being offered. It was the intention that this tournament should be played so early that the participants might finish in time to reach the wharf in Boston to join the others before the departure of the boat at one o'clock. Some of the players became too absorbed and missed the boat, the ball game and the harbor trip, though they showed up at the club house at Point Shirley in good season for the shore dinner.

There were twenty eight entrants at the tournament, and they kept busy. The cards showed the following records:

	Score.	Handicap.	Net.
Leader B. Page	83	9	74
Wallace G. Page	80	6	74
W. L. Pitcher	91	17	74
F. L. Jones	91	13	78
Philip F. Young	86	8	78
H. C. Benchley	96	18	78
E. C. Clark	86	7	79
Samuel Wright	93	14	79
Chas. Pastore	98	18	80
J. B. E. Wheeler	101	20	81
J. H. Learned	101	17	84
E. E. Wadbrook	106	20	86
H. C. Mason	102	15	87
F. L. Tufts	107	19	88
W. H. Miner	120	26	94



THE BOYS IN KHAKI CAME DOWN TO ENJOY THE GAME.

to welcome the party, which was escorted in columns of fours to the ball ground. Here the "fans" seated themselves on the green hillside and the ball players quickly donned their "uniforms" for the game.

These uniforms were, one might say, unique. They were out-sizes of ladies' hosiery which the players were directed to draw on over their trousers and to fasten up by means of large toilet

pins. The stockings for the Married Men were of a cheerful "tango" hue, while the Single Men were distinguished by the color green, as considered most appropriate. The umpires were R. L. Chipman and W. H. Miner, who, to show their strict impartiality, wore a tango stocking on one leg and a green one on the other.

It was a great game, full of fine plays and inner tumbles. Some wonderful strikes were equalled by some marvelous catches and skilful put-outs. The fans applauded and manifested their disapproval, according to their judgment of the game or their partisanship, but no attempt was made to attack the umpires. As there were no casualties, Dr. Joseph C. Stedman, the official surgeon of the club, found no opportunity to exhibit his skill during the day.

MARRIED MEN.

	Innings						
	1	2	3	4	5	6	7
Pitcher, 1b							
Young, s. s.							
Clifford, p.							
Gordon, c.	1						1
Gibbs, 2b							
Young, 3b							
Woodbury, 1							
Wilson, r. f.							1
Cutler, c. f.					1		1
Total runs	1						1

SINGLE MEN

	Innings						
	1	2	3	4	5	6	7
Sweet, 1b	1	1			1		
Clay, s. s.	1	1			1		
Lyer, c.	1			1			
Bayant, 2b				1			
Bass, 3b			1				
Andrews, 1							
Barley, c. f.							
Thomas, r. f.							
Leiburg, p.	1	1	1	1	1		
Total runs	4	3	1	3	3		1

The married men scored only six runs to their competitors' fourteen, and seven innings was enough to show the superiority of the green stockings over the tango hosiers. A mighty cheer was given the victors and the band struck up a triumphal march. The steamer then tooted a warning that it was time to re-embark for the trip across the harbor to the Point Shirley Club House, where the dinner was to be served.

It was early in the afternoon, while the ball game was in

in time of war. The observation station was filled with men, some with fine telescopes, mounted like theodolites, and others with telephones clamped to both ears, while down below in the charting rooms were others bending over a big table, plotting out locations by means of quadrants, rules and angles. Away down below in a hollowed semi-circle were the men at the big guns, which they were ready to deflect to any angle to right or left, up or down, as the word came by telephone from the conning tower. And then a tug at the rope, a boom, a roar which echoed from the shore and the distant islands, the sound of the thousand-pound projectile piercing the atmosphere, and miles away a splash which raised a white column of water to show that the shell had



JAMES J. CLIFFORD, PITCHER
FOR MARRIED MEN

FRED FEINBURG, PITCHER
FOR SINGLE MEN

fallen near enough to the moving scarlet pyramidal target to score a clean hit.

So absorbed were the spectators of these evolutions that special messengers were dispatched from the "Griswold" to warn them they would be marooned on the Island unless they hurried. They were loth to go, for no firing had taken place during the last hour, as the moving target had not been sighted. Hardly had the boat got under way again when the cannons thundered out once more, but the target was invisible to the passengers on the boat.

Arriving at Point Shirley the party was welcomed by many members who for one reason or another could not avail themselves of the afternoon programme. Here the excursionists found the space in front of the club house arranged for the quoit tournament, which was at once started. Over half a hundred contestants participated and by elimination the number gradually narrowed down until the final test was between R. S. Hodges and Henry C. Pearson, the former taking the set.

While this was in progress several Apollosque members donned blue-and-white bathing suits and stood in a statuesque group while THE INDIA RUBBER WORLD photographer endeavored to secure a work of art for this page; but daylight had faded and the result was a failure.

The swimming contest was a dive off the float, a swim around the steamer at the end of the pier, back the other side of the pier, a wade ashore and a grasp of the hand of the judge. The swimmers finished in the following order: First, Walter H. Bass; second, P. E. Young; third, W. L. Pitcher; fourth, G. L. Finch; fifth, W. F. Thomas; sixth, Robert L. Rice.

Meanwhile the preparations for the dinner were going on. The piazza of the club house was used, a head table being set at one end while the remaining space was filled with small, round tables seating six or eight people. When the call to dinner came the assemblage was quickly seated, and at each plate was found some noise-producing instrument, which was immediately put into practical use, with a somewhat amazing result. Another



UMPIRE W. H. MINER

UMPIRE R. L. CHIPMAN

progress, that the assembly was startled by a loud and sudden boom, followed by the "whee-ooo-whee-e-e" of a thousand-pound shell speeding through the air to a target five miles away. This served to inform the club members that the Coast Artillery was engaged in target practice at the other end of the island, and those of the party who were not so deeply interested in baseball proceeded over the hill to points of vantage where they could observe the *modus operandi* of attacking an invading navy

surprise was the menu, a sheet of rubber backed by friction lining, cut in the shape of a short boot and appropriately labeled, to which were attached by a bow of satin ribbon two boot-shaped leaves, one containing a list of the officers of the association and the other the bill of fare, which read as follows:

MENU

Cocktail	
Clam Broth (in cups)	Steamed Clams
Olives	Radishes
Baked Chicken Halibut	
French Fried Potatoes	Lettuce and Tomato Salad
Louis Roederer, Carte Blanche	
Broiled Live Lobster à la Point Shirley	
Fresh Asparagus	
Baked Indian Pudding	Ice Cream
Crackers	Cheese
	Demi Tasse

This menu made a fine souvenir of the occasion. It was designed by Committeeman R. L. Rice.

In the absence of President Hodgman, Vice-President Fred H. Jones presided. Seated at the head table also were: ex-Presidents John H. Flint and Henry C. Pearson, and Francis H. Appleton, Charles H. Arnold, Robert L. Rice, H. C. Mason and Secretary H. C. Vorhjs.

"Joe" Work (everybody knows him) acted as host. He is a prominent member of the Point Shirley Club, and felt it incum-

ber, eliciting much applause and service from the diners.

There were no formalities—no speeches. Such are against the custom of the club; and custom is law. Vice-President Jones, however, proposed a toast to the absent president, Mr. George B. Hodgman, to which all enthusiastically responded. Captain Appleton, after long and persistent effort secured comparative silence and a show of attention. Then a toast was proposed to Henry C. Pearson, whom he referred to as "the founder and father of the club." The next toast was to the presiding officer, F. B. Jones, whom he designated as "the next president."

Prizes were awarded with informality; the names being announced and the winners receiving them from Mr. Jones. They were:

In the Golf Tournament

Wallace G. Page, lowest net, silver and cut-glass cocktail mixer.

W. L. Pitcher, second lowest net, silver loving cup.

Lawrence B. Page, lowest gross, cigarette case.

In Quoits—

R. S. Hodges, first prize, gold cuff links; Henry C. Pearson, second prize, gold cuff links.

In Swimming Race—

W. H. Bass, first prize, gold handled pocket knife.

It was after nine o'clock when the "Griswold's" whistle gave



MEMBERS OF THE RUBBER CUP AND THEIR GUESTS AT THE MIDSUMMER OUTING

bent on himself that the dinner should be thoroughly and completely satisfactory to every guest—and it was.

While the diners were busy the band played. Between courses the diners sang, instigated thereto by the band. And while the diners dined and the band played, two little maids, lured by the music, tangoed, hesitated and Castle-walked with grace and precision up and down the space between the club house and the

an admonitory blast. Not long after lines were cast off and the trip across the harbor in the cool of the evening was far from the least enjoyable portion of the day's program. And when the members arrived at the Boston dock and parted for their several destinations it was with most hearty adieux and with a unanimous verdict that the fifteenth outing was the best in the history of the club.

The Production of Sulphur.

ASIDE from rubber itself the most important constituent of rubber goods is sulphur, and were it not for the plentifulness of the substance and the ease with which it can be obtained in a state of purity much more attention would have been paid by rubber manufacturers to its production and manufacture.

Sulphur is found native in many parts of the world and was known and used from earliest times, and its compounds are among the most widely distributed, as it is found combined in many classes of minerals. In fact so abundant is sulphur that nearly as much expense is involved in preventing it from becoming a nuisance as in the small proportion utilized; for it is safe to say that ten times as much sulphur is burned up and wasted or lost every day as is used. This is on account of the location of the sulphur bearing minerals, which are usually found in sparsely settled parts of the west, while the demand is in the east. Of late years, however, a large amount of sulphuric acid has been produced from sulphur found in zinc and copper ores and is a by-product of the manufacture of these metals. Still a large amount of sulphur ores in the form of pyrites or iron sulphide is imported from Spain for use in making acid in the east. Notwithstanding the abundance of ores consisting of sulphides or sulphur-containing ores, practically all the sulphur used in the world is found in the native state and is purified and brought into market with little expense except for freight.

Up to recent years the largest production of sulphur was in Italy, and particularly in Sicily, where for ages it has been mined and refined in a crude and primitive way. The industry was controlled and carefully watched over by the Italian Government and prices were kept up, as the world was dependent on this source. As illustrating the conditions in 1896 we may mention that an Anglo-Sicilian sulphur trust was reported on in September of that year in the United States Consular reports stating that an export tax of 11 lire per ton was then in force. The United States then consumed about one-third of the Sicilian product, or, say, 110,000 tons annually. Commenting on the situation at that time a mining journal stated that the increase in price of sulphur owing to the workings of the Sicilian combination had stimulated the development of American supplies and that more developments might follow. It referred to a report of the opening up of Texas deposits and expressed the hope that this work might progress to such an extent that it would have some influence on the market.

The above shows our dependence at that time on Sicily for our sulphur and that we were at the mercy of a trust and a government which was disposed to tax exports "all the traffic will bear."

The Sicilian method of extraction consisted merely in mining the limestone with which the sulphur was mixed, piling it in large stone kilns and setting it afire. About one-third of the sulphur was burned up in heating the rock, while the remainder melted and ran out at the bottom.

This method would never have succeeded in the United States, where it has been found that many industrial methods have had to be adapted to our peculiarities before we can make the products made in the old world. Our method of extraction is a striking illustration of the above, and we have arrived at a point now where we have entirely revolutionized the methods of producing sulphur and have not only become able to supply our entire demand for this article, but we could, if we wished, supply the entire world, the Sicilian industry surviving only on our sufferance.

This revolution in the sulphur business has been brought about practically by the efforts of one man—almost unknown to the rubber trade—whose recent death makes appropriate something of the story of his life and accomplishments.

Herman Frasch came to this country as a boy of 16 in 1868, getting a position with a pharmacist. In 1874 he established a laboratory of his own and in 1876 invented a process of refining paraffine wax which was adopted by the Standard Oil Co., with which he was afterwards employed.

It was after he had left that company and had formed the



WELL DISCHARGING MOLTEN SULPHUR.

Empire Oil Co. of Canada, and had built a factory there, that his first epoch-making invention was completed, which, while it related to sulphur, was for eliminating this element from oils. It had been easy to refine Pennsylvania oil, as it contained no sulphur, but when the Ohio and Indiana oils and the Canadian oils were thus simply treated they were found to be useless on account of the sulphur which they contained and which clung to them.

They sometimes contained as much as one per cent. of sulphur. Mr. Frasch studied out a method of purifying these oils by using oxide of copper, which united with the sulphur and held it back in the still while a sweet refined oil distilled over, thus making the Ohio and Canadian oils as valuable as the Pennsylvania oils had been.

In 1888 he had a large plant established for working this process, which the Standard Oil Co. bought, with the patents,

after he had proved by actual competition with them that by this means only could they get a salable product from the oils of Ohio and Canada. It would probably have been less expensive for the Standard managers if they had recognized his abilities and paid him a salary that would induce him to stay with them rather than go out and become a competitor, but it is often necessary to sell brains with a club. He was paid in stock worth then 168, half of which he sold after his process was applied for at 820 a share, as this was the market price which had been created by the profits of his process.

It was in 1890 that Herman Frasch applied for his patent on the production of sulphur which has made this country the

that time no barrels or movable vessels have been used to hold the melted sulphur.

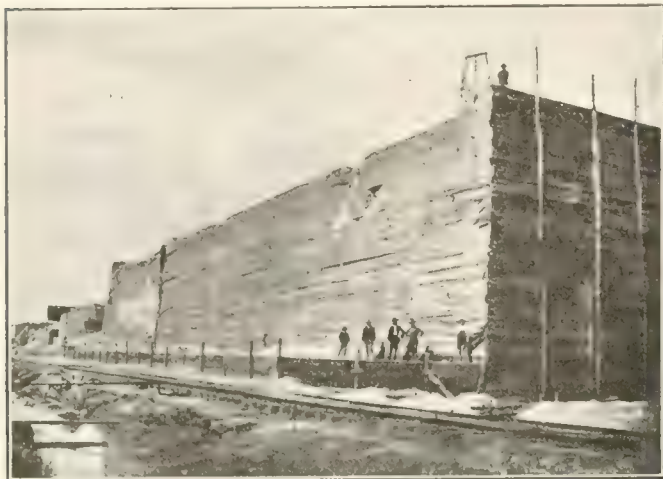
When everybody had gone home Mr. Frasch mounted the pile of solidified sulphur and listened to the noises produced by contraction of the cooling sulphur, which he regarded as a greeting from below—proof that his object had been accomplished.

To show the success of this method of pumping sulphur it is only necessary to quote the figures of imports and exports of sulphur from the United States.

In 1903 the United State imported 188,000 tons of sulphur and exported none. In 1907 we imported 20,399 tons and exported 35,000, showing that we then produced a little more than we consumed. At present this country is supplied with sulphur from these Louisiana deposits, using the Frasch process, and it might supply large quantities to Europe were it not that the broad-minded and large-hearted men in control could not be induced to bring starvation and ruin on the two hundred and fifty thousand miners in Sicily. To illustrate the difference in labor it may be mentioned that now 700 laborers produce 250,000 tons of sulphur per year in Louisiana.

To give some conception of the magnitude of this industry and to illustrate the methods of work—as well as can be shown in above ground views—three photographs are herewith reproduced, the first showing a well discharging 500 tons of molten sulphur per day with its derrick prominent in the foreground, and in the rear a boiler house for supplying the hot water. The row of smokestacks gives an idea of the magnitude of the boiler installations. The sulphur deposit seems to be circular and about one-half mile in diameter, and the sulphur beds extend to a depth of about 1,100 feet and consist of approximately 70 per cent. sulphur and 30 per cent. limestone.

The installation comprises 25,000 H.P. of boilers, making it one of the largest in the world, but as oil only is used, it requires but three men on each shift to attend them. They consume a million barrels of oil per year and use 7,000,000 gallons of water per day, which is pumped seven miles. The



BINS FOR COLLECTING AND COOLING SULPHUR.

greatest sulphur producer in the world and promises to make it the sole producer when in the future it decides to go after the trade of the world.

It had long been known that there was a large deposit of sulphur in Calcasieu parish in Louisiana at a depth of about a thousand feet, but as this deposit was covered with quicksand for nearly the entire depth no one had yet succeeded in mining it on a commercial scale though there had been many efforts, especially during the war, when it was needed desperately by the south for use in making powder.

Mr. Frasch evolved the idea of melting the sulphur in place by means of superheated water forced down a bore hole from a large battery of steam boilers and forcing the melted sulphur up with the water through an inner tube. He had had much experience in drilling oil wells and had also been interested in the production of salt where a well is driven and water is forced down the hole to the salt, which it dissolves, the resulting brine then being pumped to the surface. But nobody had ever before run a large set of boilers where the feed water was pumped in through the steam pipe and the water continually drawn off through the blow off. This reversal of procedure is what makes it revolutionary in its conception.

Of course, a method of proceeding so radically different from the orthodox was sure to bring out criticism and prophecies of failure, and Mr. Frasch himself told a story to illustrate the sentiment in the neighborhood. He described how the hot water was first turned into the wells and how they feared that it would cool down and let the sulphur freeze in the ground, but after forcing in the hot water for twenty-four hours they decided to begin pumping and soon there came a stream of sulphur from the pressure vessels into which the water and sulphur were pumped. It filled 40 barrels in 15 minutes and having no more barrels they threw up embankments to hold it; and since



BEATING THE SULPHUR TO LOAD ONTO FLAT CARS

wells are sunk in groups and will run for several months, producing sometimes 500 tons per day, but after a time they fill up, when others take their place.

It was early discovered that while it was easy to force the hot water from the boilers down the outside pipe and that it would melt the sulphur in the ground, yet to pump up this water and melted sulphur was difficult, as nearly every metal was soon eaten out. The method of pumping with an air

lift was then adopted, and it forces up a stream—of the size shown—of a mixture of hot water and melted sulphur. The sulphur comes up so free from impurities that it is guaranteed 99.5 per cent. pure and runs considerably better than that.

The sulphur is collected and cooled in large bins about 150 to 250 feet square, made by setting posts into the ground and nailing 2-inch planks to them. As the sulphur is delivered into the center of the bins and spreads out into layers 3 inches thick it cools so rapidly that continuous operation is possible. A separate bin is used for each well so that a record of its production can be kept. As the sulphur rises the bins are raised by more planking till they are sometimes over 60 feet high. When one is full another is built alongside, so that



HERMAN FRASCH.

continuous blocks of sulphur are formed. One of them is shown in the second illustration which contains over 100,000 tons of sulphur; which is more than we used in 1896 in the entire United States. When shipment is to be made a track is laid alongside the sulphur, which is blasted down and picked up with a 2-ton locomotive crane shovel and loaded into flat cars—as shown in the third picture—and a 35-ton car can be loaded in 14 minutes. While some of the sulphur is loaded directly into box cars at the works with a box car loader, and shipped direct, most of it is shipped to Sabine Pass, Texas, where it is loaded into steamers for the north and for Europe. The company owns one steamer of 5,500 tons register, named the "Herman Frasch," and employs several more in distributing its product.

Herman Frasch, to whom this development is due, died in Paris on May 1 of the present year. He received the Perkin Medal in 1911 for his distinguished services. This medal is awarded annually by the associated chemical societies of the United States for distinguished work in chemical science and is an indication of the honor in which the recipient is held by the brother members of his profession.

This deposit of sulphur in Louisiana, while being the most remarkable, is not by any means the only deposit of the kind, and there is said to be a large similar deposit near Freeport, Texas, which was discovered in boring for oil. A syndicate has bought it up and has installed a large plant on it similar to the plant described above, but the shipments as yet have not been heavy.

About three miles from Cody, Wyoming, there is a deposit of native sulphur said to be of varying thickness from 60 to

75 feet, lying about 7 feet below the surface, and drill holes show the presence of about a half million tons of sulphur. As the fuel cost is low, owing to the fact that the company owns a coal mine nearby, they are mining about 25 tons per day by digging it up and throwing it into a retort and steaming out the sulphur with steam at 60 pounds pressure. The sulphur of course liquefies and can be drawn off from the bottom.

There may, in the future, be a large quantity of sulphur thrown on the market as a by-product of smelting copper ores, as in many localities—notably California—the smelters have been closed by court injunctions on account of the sulphur fumes, which destroy the vegetation for miles around.

There are now two prominent processes being tried out for saving this as metallic sulphur and so avoiding the production of the sulphurous fumes. One of these is known as the thiogene process and is based on the reduction of the sulphur gases to free sulphur by passing them over hot lime while spraying with crude oil. This process has not yet been perfected on a commercial scale. If it should be it would furnish an unlimited amount of sulphur. The Hall process operates on another principle, namely, that of roasting off the sulphur in a closed vessel from which the air is excluded to prevent the formation of sulphur gas fumes. This is usually done by roasting with oil, using a spray and a very limited amount of air, and at the same time blowing in steam. The process has been introduced at a large smelter in Shasta County, California, but its success is not yet assured. Should it prove successful the Shasta County smelters alone would produce twice as much sulphur as the United States now consumes.

While rubber men foresee a large expansion of the rubber industry on account of the cheapening of the plantation gum, which will compel them to consume much greater quantities of sulphur in the future than they have in the past, it will not be necessary for them to worry as to a future supply of this article so necessary to their industry. From the present viewpoint there will always be sulphur enough, and to spare.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufacturers of india rubber and gutta percha for the month of April, 1914, and for the first ten months of five fiscal years, beginning July.

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
April, 1914.....	\$197,510	\$59,652	\$638,776	\$895,938
July-March	1,779,984	911,576	5,442,555	8,134,115
Total, 1913-14.....	\$1,977,494	\$971,228	\$6,081,331	\$9,030,053
Total, 1912-13.....	2,155,168	1,266,807	6,849,469	10,271,444
Total, 1911-12.....	1,918,285	1,323,060	5,984,379	9,225,724
Total, 1910-11.....	1,742,683	1,894,282	5,198,295	8,835,260
Total, 1909-10.....	1,580,088	1,593,696	4,082,427	7,256,211

The above heading, "All Other Rubber," for the month of April, 1914, and for the ten months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
April, 1914.....	\$304,385	\$48,562	\$352,947
January-March	2,378,959	440,966	2,819,925
Total, 1913-14.....	\$2,683,344	\$489,528	\$3,172,872
Total, 1912-13.....	3,115,279	494,101	3,609,380
Total, 1911-12.....	2,063,603	467,290	2,530,893

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

WHAT THE RUBBER CHEMISTS ARE DOING.

[It is to be remembered that in the chemistry of Rubber which has appeared in some of the foregoing publications.]

THE ACTION OF COPPER AND OTHER METALS ON RUBBER.

IN the "Gummi Zeitung," vol. 28, page 1280, F. Frank and E. Marckwald publish an investigation on "The Action of Copper and Other Metals on Rubber." The authors examined a number of decomposed rubber-insulated cables. In some cases the decomposition was such that the insulation was soft and sticky while in other cases hardening in the insulation had resulted. It was observed that the tin plating of the copper wire had been corroded in every case where the decomposition of the insulation had resulted. This corrosion of the tin plating resulted in the copper being attacked, and it was possible to identify copper sulphide wherever such corrosion of the tin had taken place. It was found on analysis that the insulations of the cables which showed no tendency to decompose had a vulcanization coefficient of 4.5. The tin plating on the copper wire had not been affected and only very small specks of copper sulphide could be observed on the wire. Careful examinations revealed no trace of copper in the insulation.

In the case of the decomposed cables, the analysis showed a much lower coefficient of vulcanization, and also a much lower total sulphur content, the coefficient being in the neighborhood of 1 as opposed to 4.5 in the case of the satisfactory insulations. As only traces of free sulphur were present in the decomposed insulations, it was evident that an error had been made in the weighing out of the sulphur, with the result that under-vulcanization had resulted. It was easily possible to identify copper in the decomposed insulations. The rubber substance of the decomposed insulations was completely soluble in acetone, only the inorganic minerals remaining behind after extraction with this solvent. This acetone extract on purification with petroleum ether yielded a hard brittle product, free from nitrogen, and containing 2.7 per cent. mineral matter. The analysis of this material, after allowing for the mineral matter, gave the following values:

Carbon	73.21 per cent.
Hydrogen	9.19 per cent.
Sulphur	1.43 per cent.
Oxygen (by difference).....	16.17 per cent.

The analysis shows the material to be a highly oxidized product. In the presence of the copper, therefore, the under-vulcanization has brought about the high state of oxidation of the rubber.

As a result of their investigation the authors arrive at the following conclusions:

- (1) The composition of the rubber insulation must be such that a quick and reliable combination of the sulphur and rubber results.
- (2) The vulcanization should be a quick one, a high temperature being resorted to if necessary. By the latter means it is always possible to cure in a very short period of time.
- (3) The tin plating on the copper wire must be uniform.
- (4) Under-vulcanization, even with a subsequent after vulcanization, is not permissible.

THE COAGULATION OF HEVEA LATEX AND ITS BEARING ON THE STRENGTH OF RUBBER.

In the "Journal of the Society of Chemical Industry," page 289, Newton W. Barritt contributes an article on "the Coagulation of the Latex of *Hevea brasiliensis* and its Bearing on the Strength of Rubber." The author carried out a large number of test tube experiments on the coagulation of fresh *Hevea* latex in solutions of varying concentrations of acid and salt. The acid concentrations varied from five-hundredth normal to twice normal, while the salt concentrations varied from one-hundredth normal to twice normal. Standard solu-

tions of acid and salt were run into the test tubes to make the required strengths and $\frac{1}{2}$ cc of fresh latex was then added to each tube. The liquid was thoroughly stirred to effect complete decomposition of the latex, and allowed to stand for 24 hours to insure equilibrium. The tubes in which coagulation was just short of completeness were then noted and the acid and salt concentrations plotted on squared paper with the concentrations of acid as abscissae and concentrations of salt as ordinates. All points within the curves show concentrations of acid and salt at which coagulation does not take place, while all points above the curve show concentrations of acid and salt at which coagulation is complete and no caoutchouc globules are to be found in the serum.

It was found that the coagula formed by high concentration of salt at points distant from the curve were tougher and stronger in texture than those found at low concentration of salt, which latter were soft and spongy. It was also found that the water-absorbing capacity of the coagulum varies inversely as the concentration of salt in the serum. The inhibiting effect of acids on coagulation increases with increase of concentration of acid up to a certain maximum. Beyond that, in the case of hydrochloric and sulphuric acids, the inhibiting effect begins to diminish with increasing concentration of the acid, until at a concentration of $N/2$, coagulation takes place without the addition of salt. With acetic, lactic, and phosphoric acids further increase in concentration has no effect, and these acids are unable to produce coagulation at any concentration in the absence of salt. The comparison of the coagulating effect of various salts shows that the valency of the radicals does not appear to exert much influence. According to Seeligmann, *Hevea* latex from Brazil contains 55 per cent. water and 9 per cent. mineral salts. The author suggests that it is very probable that this high salt concentration is a factor determining the superior quality of Brazilian rubber, and that the dilution of the latex by the direct addition of water and acid solution, as practiced by the eastern plantations, is largely responsible for the inferiority of plantation rubber. This theory would also account for the variation which exists among plantation rubbers, even from the same estate, since it has been shown that the yield and composition of the latex vary considerably with respect to percentages of caoutchouc, protein, and ash, according to length of tapping, age of trees, and rainfall. In order to obtain uniform quality it would appear necessary to insure uniform compositions of the latex, especially regarding its ash and protein contents and concentrations.

The author has experiments in progress which are intended to throw light on this point but postpones discussion of the results until vulcanization tests of the samples have been obtained.

THE VISCOSITY OF RUBBER SOLUTIONS.

In the "Journal of the Society of Chemical Industry," vol. 33, page 446, R. Gaunt publishes an investigation on "The Viscosity of Rubber Solutions." In making up the rubber solutions for the viscosity experiments, it was observed that greater quantities of rubber yield a rather more than proportionate amount of dissolved matter to the same quantity of solvent. It would therefore appear that the dissolved rubber causes a partial solution of the insoluble constituent. For the subsequent investigations the author used samples of (a) Pale Fine Plantation Crêpe, *Hevea*; (b) Fine Hard Para; (c) *Castilloa*; (d) *Funtumia* Sheet; (e) Ceara Biscuits.

Of these rubbers Fine Hard Pará is the most insoluble, especially in the unwashed condition. By passing the Fine Hard Pará through a washer for 45 minutes in a stream of cold water, the solubility is considerably increased. Heating with solvents also increases the solubility. The viscosity of rubber solutions varies greatly with different solvents. Benzol and chloroform produce solutions whose viscosity is

much greater than is that of gasolene or ether solutions. Especially in the case of the plantation rubber is a marked difference observable between the viscosity in benzol and the viscosity in gasolene. In comparing the viscosities of different rubbers in the same solvent, it is necessary to make a correction for the amount of resin present in the rubbers. On making this correction, viscosity curves for Fine Pará and *Castilloa* practically coincide. Furthermore, the lowering of the viscosity due to washing the rubber on the mill in a stream of cold water is greater in the case of Fine Pará than in the case of *Castilloa*. For connecting the viscosity of solutions with the concentration, the author suggests the use of the following logarithmic equation

$$\eta = K^x$$

where η = viscosity at concentration X , η_0 = concentration, and K = constant.

By plotting the logarithmic viscosity against the concentration, straight lines were obtained in the case of the rubbers examined and the author suggests that the inclination of these lines with the abscissa would seem to be the simplest way of numerically comparing the viscosity of rubber solutions.

Both heat and light bring about a lowering of the viscosity of rubber solutions. At high temperatures the effect of light appears to be less marked than that of the heat. In fact, the effect of light began to make itself felt only after two hours under the simultaneous action of heat. It was observed that heat alone, in the absence of air, caused decrease of viscosity. The action of heat, therefore, is to decrease the viscosity of rubber solutions, apart from any oxidation which the rubber may undergo. The rate of diminution of the viscosity varies with the time of heating, being greatest at the commencement.

Experiments were also carried out to determine the change in viscosity of Plantation Pará in different solvents when heated to 80° C. The change is more marked in the case of xylol solutions than in the case of benzol and toluol solutions. In purified toluol, the diminution is less than in commercial toluol. A similar difference is observed between solutions in pure benzol and solutions in 90 per cent. benzol. The effect of the addition of small quantities of the usual impurities in benzol (carbon disulphide, thiophene and xylol) was determined. Only xylol caused an increased diminution in viscosity. A rubber solution of benzol containing 0.5 per cent. xylol decreased in viscosity much more rapidly than did the pure benzol solution. In order to determine the decrease in viscosity of different rubbers under the action of heat, solutions of equal viscosity of the different rubbers were taken and their viscosity redetermined after the heat treatment. It was found that the percentage decrease of the *Hevea* rubbers was greater than that of the *Funtumia*, *Castilloa*, and Ceara rubbers. The author explains the decreases in viscosity as being due to a de-aggregation or depolymerization of the rubber molecules.

VANADIUM AND TUNGSTEN AS COMPOUNDING INGREDIENTS.

Chemical compounds derived from the commonly occurring minerals have been used in rubber compounding since the beginning of that art, and today when the writing of recipes is getting to be a science, the original line of mineral substances is still being used.

Since our manufacturers have enlisted the services of research chemists they have, however, added to the number of suitable mineral fillers. These indefatigable workers have explored the domain of "rare" metals and the results of their labors are being given to the consumer in the form of "long life" rubber goods.

At Primos, Pennsylvania, Walter M. Stein has been conducting

experiments with the aid of Vanadium Pentoxide (1'-2, O-5) and Tungsten Trioxide (Wo, O-3). The preliminary work on these oxides seems to indicate that they are useful as "toughening agents" and as "accelerators." With this as a beginning may we not hope to see a "Hole-Proof Gum Shoe" or a "Knotair Firehose" ere long? The preliminary reports state that less than five per cent. of either oxide will influence the properties of the compound to a marked extent. In fact it may be necessary to use the oxides in Hahnemannian doses in order to obtain the maximum toughness in the compound.

Surely the Automobile Set will wish Mr. Stein unlimited success in this new application of Vanadium and Tungsten compounds, for the selfsame oxides are even now being successfully used for toughening no less a thing than steel!

INTERESTING LETTERS FROM OUR READERS.

WILLING OTHERS SHOULD GET THE SYNTHETIC PROFITS.

TO THE EDITOR OF THE INDIA RUBBER WORLD, Dear Sir: Your interesting editorial on the latest synthetic rubber (which includes resins in its composition) reminds me of the inventor who produced synthetic milk so perfect that cow hairs had to be strained out of it. If rubber can be produced at eight cents a pound, the benefit ought to be for the whole race instead of the fortunate few who manage to be the first to get to the window with their million dollars to buy the stock of the company. The capitalization ought to be a hundred million at least in order to give a hungry and clamorous public a chance to get in on the ground floor. That the public right may be maintained there ought to be a federal law by which the owners of great secrets of this character should be compelled to perform their magic arts in the government laboratories at Washington before they sell any securities to the public. They should have every help and facility, and if they can make rubber out of sawdust or frozen potatoes the certificate of government chemists that they actually had done the thing would well repay them for their time and trouble.

If, on the other hand, they need eight pounds of sawdust, eight pounds of tree rubber and four pounds of frozen potatoes for every eight pounds of synthetic rubber produced, it would be shown that the latter was not manufactured so economically as to warrant the expectation of large dividends on extensive capitalization, and the promoters would be advised to form a close corporation for the exploitation of their invention and especially not to use the United States mails in connection with their stock-selling until they were able to reduce the amount of tree rubber going into their synthetic product. Meantime, I shall not join the rush for the new securities. I am not selfish and do not wish to be the envy of my fellow-men.

ALTRUIST.

PROTECT PLANTATION RUBBER FROM SPLINTERS BY WRAPPING IN GLAZED SHEETING.

TO THE EDITOR OF THE INDIA RUBBER WORLD, Dear Sir: Mr. H. W. French's timely letter in the June number of THE INDIA RUBBER WORLD re wood splinters reminds me of the remedy suggested by a brilliant Boston superintendent and chemist, namely: Before packing plantation rubber in the East it should be wrapped in glazed sheeting such as is used in keeping uncured tape from sticking together. This is said to come one yard wide, and moreover is cheap.

Boston.

QUINCY TUCKER.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE RUBBER TRADE IN AKRON.

Our Regular Correspondent.

THE tax returns now in show some interesting figures relating to the rubber business of this city, in comparison with those of last year. The returns of the B. F. Goodrich Co.—whose capital stock is \$90,000,000—while not in excess of those of last year, amount to \$19,920,000, of which \$12,497,500 is in Akron personal property and \$4,422,500 in Akron real estate. The Goodyear Tire & Rubber Co.'s returns are \$5,184,980, an increase of \$420,730 over those of 1913. The returns of the Firestone Tire & Rubber Co. are \$5,227,344, of which \$4,021,314 is in personal property and \$1,206,030 in real estate. The returns of this company in 1913 were \$2,481,500. The Whitman & Barnes Manufacturing Co. returns are \$395,790, against \$324,850 in 1913; the Rubber Products Co. \$227,930, against \$58,200; the Mohawk Rubber Co. \$70,500, against \$22,280, and the Adamson Machine Co. \$147,320, against \$102,280.

* * *

The industrial committee of the Akron Chamber of Commerce is making efforts to persuade capital to bring to or establish in Akron other industries beside rubber, as it is felt that the city is becoming industrially unbalanced owing to the extent of the rubber goods production; and a new line of railway, known as the Akron, Canton and Youngstown, recently put in operation and affording largely increased shipping facilities, is mentioned as an additional inducement to the natural advantages of the city.

* * *

The touring bureau of the B. F. Goodrich Co. has been adding year by year to its statistical information, maps, etc., until during the present season it has placed at the disposal of the touring public route books and information obtained from actual surveys covering more than 300,000 miles of road—the best touring roads in the United States and Canada—on much of which Goodrich road markers, to the number of 45,000 or more, have been set up. This bureau also supplies a book covering the rules of the road, as well as a European route book giving customs regulations of the principal foreign countries and valuable information on how to ship cars and how to get about on the Continent. These route books, etc., may be obtained at any Goodrich branch or on request to the company at Akron.

During the recent Ohio State Convention of the United Commercial Travelers, held in this city, about 600 delegates visited the Goodrich plant, making an inspection of the various departments—tire, belting, molded and mechanical rubber goods, etc.—in all of which they were much interested. The feature that impressed them the most, however, was the "safety first" idea as carried out in the plant by means of numerous devices for the protection of workmen.

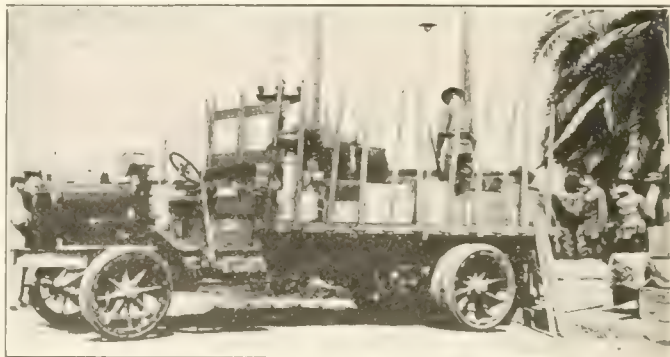
The Firestone Tire & Rubber Co. has recently installed an industrial library. Any person employed by the company, whether in Akron or its branches, has at his command all the reading matter that pertains to his particular line of work. This is collected and classified by the chief librarian and his assistants. The research staff works constantly over the newspapers, magazines, trade journals and books, and this matter is indexed and distributed in such a manner as to be most helpful to the employees, for whose benefit it is also planned to open a correspondence course. It is expected that this library will be extended to cover books on personal efficiency and home and social economics, so that the general education of the employee will be provided for.

An outing which included a fifty-mile automobile trip, athletic sports, entertainment and an old homestead dinner at the Firestone homestead in Columbiana county, was recently

tendered by H. F. Firestone to the foremen of the company's factory in this city.

* * *

The accompanying illustration shows a five-ton motor truck in the service of the United States Army, transporting American soldiers from San Diego to the Mexican border. The motor truck has many advantages over the old-time



MODER TRUCK FOR ARMY SERVICE

mule-drawn vehicle for army purposes, and especially in the saving of time it effects, the truck shown, equipped with Firestone solid tires, having made the trip from Los Angeles to San Diego—a distance of 148 miles—in 13 hours.

W. E. Young, as administrator of the estate of Homer A. Hine, has filed suit in the Common Pleas Court of Summit County, asking that a receiver be appointed for the Star Rubber Co., located at 1025 Sweitzer avenue, this city, and that the property be sold to satisfy the demands of creditors. It is stated in the petition that Mr. Hine died March 28, having endorsed negotiable paper for the Star Rubber Co. amounting to forty thousand dollars, thirty thousand dollars of which is past due. C. I. Bruner, of the First-Second National Bank of Akron, was appointed receiver to take charge of the affairs of the company pending liquidation, and a motion has been filed, asking for appraisers to be appointed. Mr. Hine was secretary and treasurer of the Star Rubber Co. and very active in its affairs, and his untimely death has precipitated matters that, had he lived, would doubtless have been taken care of.

* * *

The Kelly-Springfield Tire Co. has just moved into new factory offices in Akron, which are commodious and modern in every particular. F. E. Holcomb, superintendent of the company, is slowly recovering from a siege of rheumatism. He is at present at Mount Clemens, Michigan.

* * *

The Portage Tire & Rubber Co. has extended its field into the rubber sole and heel trade.

* * *

The Akron City Fire Department has recently sold the last horse belonging to the department and has installed the latest automatic steam and gasoline fire apparatus, with substantial rubber tires.

* * *

The factory workers of Akron express themselves as well pleased with the workmen's compensation law now in force in this state, describing it as "the best and biggest thing that has ever been done for us." Among the rubber workers who have experienced the benefits of its operation are the following: Charles Brown, who suffered a broken finger while working in the plant of the Firestone Tire & Rubber Co. and was unable to work for three weeks, had his position held open for him, received pay for the lost time and the amount of his doctor's bill. Frank Palmer, also injured at

the Firestone plant, received an award of \$85.71. Arthur R. Robinson, injured in the Goodyear plant, received an award of \$58.29. John Gruber, also injured at the Goodyear plant, \$36. Gust Savage and Adam Wagner, for injuries received in the plant of the Kelly-Springfield Tire Co., were awarded respectively, \$733 and \$48.77.

* * *

It is said that the Goodyear Tire & Rubber Co. has already purchased the \$350,000 of its preferred stock which it is required to retire annually beginning with the next fiscal year—one year in advance of the stipulated period.

* * *

Two Akron balloon pilots—R. A. D. Preston and R. H. Upson—will be entered in the international race for the James Gordon Bennett trophy. Preston has qualified for the event by winning the national elimination contest in the balloon "Goodyear." With M. D. Tremelin, of Akron, as his aid, Pilot Preston covered approximately 300 miles in the contest which started from St. Louis, July 11, under the auspices of the Aero Club of St. Louis.

Another American entry in the forthcoming race is H. E. Honeywell, of St. Louis, who secured second place in the last international.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THE midsummer season finds trade somewhat below normal but on the whole satisfactory, when all factors are considered. To be sure, the rubber footwear business is very quiet, as far as overs and boots are concerned, but the tennis demand has kept up wonderfully, and this has been a banner season, with another month yet to be added to the already high record. The automobile tire business is better than earlier in the season. This is accounted for by one leading agent as a result of economy early in the season, when automobilists, instead of starting out with new tires, determined to get all they could out of the old ones, which they are now obliged to replace.

The hose business is about over, as regards garden hose, but some orders for fire hose are coming in. The call for fruit jar rings has been and still is lively. Strange as it may seem, when one considers the stories of prevailing industrial depression, the call for belting and packing is better than it has been for some months. Stories differ as to druggists' goods, and the same is true of rubber clothing, though some houses in the latter line have all they need to keep their factories going full time on orders. In the sole and heel business there seems to be an average of one or two new firms starting each week; and the curious part of it is, they all seem to get some business.

* * *

Speaking of rubber footwear, your correspondent was surprised to find in the small ad. columns of the daily papers an advertisement which reads as follows:

RUBBER BOOTS.

"About 400 pr second-hand rubber boots; Short, 75c, \$1 and \$1.50; Storm King, \$1.25 and \$1.75; Sporting, \$1.50 and \$2; Hip, \$1.50, \$2 and \$2.50. Atlantic Marine Exchange, 14-16 Atlantic av."

There are plenty of second-hand shoe stores in the poorer sections of Boston, but it is doubtful if any one of them can furnish more than a single pair of second-hand rubber boots. Here, evidently, is an assortment, and enough to stock up a small store. Where did they come from? From the junk dealers, perhaps. Certainly the prices named are better than 6 cents a pound, the present quotation given by the dealers to collectors.

* * *

Your readers are all familiar with the munificent gift to Boston by President Forsyth of the Boston Belting Co.—the For-

syth Dental Infirmary—full illustrated account of which has been given in previous numbers of THE INDIA RUBBER WORLD. This institution is a beautiful building in the finest section of the city. I understand that the date for the opening of the infirmary has been definitely set for the first week in October, when it will begin its work with a capacity of over one thousand patients a week.

* * *

The entire assets of the Pilot Raincoat Co.—stock, tools, fixtures, machinery, etc.—were sold at auction on the 14th inst. for the benefit of the creditors.

* * *

Mention has been made in this journal of the growing scarcity of leather and the increase in the use of rubber, either alone or combined with other substances, to take its place in soles for footwear. At the Shoe & Leather Market Fair, however, there were shown other substitutes, which may, perhaps, replace rubber for that purpose. Rubber soles and heels were shown by several concerns, among them being: The Essex Rubber Co., of Trenton, New Jersey; The Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin; The B. & R. Rubber Co., of North Brookfield; The Foster Rubber Co., Boston; The Empire Rubber & Tire Co., of Trenton; The O'Sullivan Rubber Co., New York; The Panther Rubber Co., Stoughton; The Plymouth Rubber Co., Canton.

Besides these manufacturers of rubber soles and heels there were exhibitors of various other products which contained rubber. The Vulcan Fibre Co. showed a sole which combined shredded leather with rubber, making a sole which it is claimed is proof against the slipping so objectionable in worn rubber soles on wet pavements. The Avon Sole Co. also exhibited soles of comminuted leather vulcanized with rubber.

The Revere Rubber Co. showed a new type of leather and rubber cut sole. It is called the "R. I. L.," or Rubber Interlined Leather sole. It is really a rubber sandwich. The tread is of high grade sole leather. The part coming next the inner sole is of soft split leather, and between the two is an interlining of pure gum rubber. The whole is vulcanized together, making a unit which is likely to interest shoe manufacturers. The inventor, J. D. Prince, claims great flexibility, light weight, superior wear and waterproof qualities.

And a novelty—or nearly so—is the introduction of specially prepared felt soles, two concerns showing a solid, waterproofed felt, for which the claims are softness of tread, warmth and good wear.

But another sole was shown, by Kenworthy Brothers, which, while being of felt, nearer approaches in appearance the leather or rubber sole it is intended to supersede. It looks like rubber, but I am informed that no rubber is used in its construction. An examination would lead one to believe it was felt impregnated with some such preparation as that used in manufacturing linoleum or heavy oilcloth floor covering. This is claimed to outwear either leather or rubber for soling, and is practicable to place on the shoe either by hand or machine stitching.

So it is worth mentioning here that rubber soles may be superseded by something else, though the present outlook is that the demand will not be greatly lessened during the coming season.

* * *

While about it, it would be well to mention that the Revere Rubber Co. had as a base of its exhibit a great mat made of Spring Step rubber heels, thousands of them fastened together, making a solid carpet. The company offered a prize to the one who should guess the nearest to the number of heels in the mat. The number has not been given out. Possibly the mat may again be used for a similar competition. It is reported that its cost was more than one thousand dollars, each heel being perfect and including the red plug which forms a trade-mark of the company.

Changes in the capital stock of the Congress Shoe & Rubber Co. and the Pilgrim Rubber Co. are reported. These two companies, which are both selling rubber footwear made by the Hood Rubber Co., recently moved from adjacent premises on Atlantic avenue to adjoining and connecting stores on Summer street extension, while the management and officers of both companies were changed. Since then the Congress Shoe & Rubber Co. has authorized a reduction in capital from \$100,000 to \$5,000 by the cancellation of \$45,000 of common stock in the hands of the treasurer and the surrender of authority to issue \$50,000 preferred, none of which has ever been issued. The Pilgrim Shoe & Rubber Co., in contrast, has authorized an increase in capital stock by 500 shares of common.

* * *

I understand that the Fisk Rubber Co. has been most successful since its reorganization in 1912, and that its last year's gross business was nearly \$12,000,000, about 50 per cent. better than its 1912 showing. It is now turning out nearly 3,000 tires per day, if reports in the daily press are accurate.

* * *

Ernest W. Graves, president, and Douglas N. Graves, treasurer of the United States & Mexico Banana Co., who have been accused of selling the assets of that company for \$56,000 and failing to distribute this sum among the stockholders, are alleged to have been promoters of rubber plantation companies and fruit raising corporations, using the firm name of Graves & Graves, Inc., circularizing small investors in various sections of the country. The court was asked to restrain the defendants from disposing of the moneys or assets of the corporation, and to appoint a receiver, but when the case was called for trial, on July 15, the complainant, William L. Thompson, did not appear, an agreement to dismiss the suit having been reached.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

CONDITIONS in the rubber trade in this city are quite favorable in most lines, and particularly in tires and belting, the opinion being expressed by one of the leaders in the industry here that a new record has been made this year by the belting concerns of Chicago. The initial sales were heavy, and the requirements necessitated by the unusually large crops have increased the total to very satisfactory figures. One sale during the month by the W. H. Salisbury Co. to the Rock Island Elevator at Kansas City, Missouri—a repeat order—amounted to 2,500 feet of 22 and 30 inch belting.

The tire business in the middle west has shown a marked improvement during July, due to two causes—the improvement in country roads owing to the favorable weather and the increasing popularity of extended motor trips.

Another line in which sales are expected to materially improve in the near future is in railroad supplies. In an exclusive interview with your correspondent, Mr. J. H. Anderson, of the local branch of The B. F. Goodrich Co., had the following to say on this subject:

"If the request of the carriers for an increased freight rate is granted, as I understand it will be within a few weeks at the latest, there will be some phenomenal purchases of air-brake hose, bell cord and other rubber products used by the railroads. I have reason to believe that the stocks of most of the railroads are low. They have been following a policy of retrenchment, owing, I think, to a certain resentment over the delay in granting them the increase they want. Now I believe that if the increase in freight rates is given to the railroads in the near future they will at once change their policy, and not only proceed to push business in all directions but pass out the word to their purchasing departments to load up at once. Most of the western railroads buy their entire supply of rubber equipment in Chicago, and many of the eastern roads also come

here for similar supplies. The total figures last year in rubber supplies purchased by the railroads of the country reached \$8,000,000, evidence that the railroads are no mean customers."

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

OWING to the close relationship of the affairs of the Consumers Rubber Co., of Bristol, the Atlantic National Bank of this city and the Walpole Tire & Rubber Co., all of which are in receivers' hands, the outcome of the settling of the affairs of the latter concern is being watched with more than usual interest in this vicinity. The auction sale of the plant of the Walpole company, which on June 1 was postponed to July 8, because the upset price of \$1,500,000 was not reached, on the latter date was again postponed until August 12. Curtis G. Metzler, representing the reorganization committee of the stockholders, stated to the court that his committee had come to a partial agreement with the creditors' committee that inasmuch as the masters had not found, with respect to some \$300,000 of claims, as to whether they should be allowed or disallowed; and with plans pending whereby the reorganization committee shall bid in the plant, the postponement was agreed to.

* * *

The new plant of the Phillips Insulated Wire Co., in Pawtucket, will, when completed, be a model of its kind. The specifications have been completed and the old plant will be connected with the new, across Freeman street, by tunnels. The maximum dimensions of the new mill building will be 200 x 200 feet, three stories and basement. The lower floors of the mill will be of exceedingly heavy construction, the two upper floors being of ordinary strength. Steel floor beams and cast iron columns will be used throughout. The mill tower will contain a 30,000 gallon tank to serve a complete system of automatic sprinklers. The new power house and mill are to be connected with each other and with the present plant by an overhead bridge and three underground tunnels.

The power house will be about 100 feet long, 60 feet wide and 40 feet high. It will be equipped with two 600 kilowatt, 550 volt, three-phase 60-cylinder turbo-generators, made by the General Electric Co. The generators will operate, condensing by means of a surface condenser made by the Wheeler Condenser & Engineering Co., using an Edwards air pump and a turbine-driven centrifugal pump made by the De Laval Co. The Barnard cooling tower will be 65 feet high, and will be operated by two fans 10 feet in diameter running at 220 revolutions per minute. Steam will be furnished by eight 90-inch Manning boilers having a total capacity of 2,400 boiler horse power. The coal for the boilers will be stored in an underground coal pocket adjoining the entire length and end of the power house for a distance of 170 feet. The chimney will be of red radial brick, 175 feet high and 7 feet internal diameter, and will have lightning rods and exterior ladder. The power house will be equipped with "fenestra" steel sash, wire glass and copper doors and will be entirely fireproof throughout. An artesian well, 700 feet deep, will furnish a supply of 200,000 gallons of water daily.

* * *

Colonel Samuel P. Colt, president of the United States Rubber Co., sailed on July 1 from New York on the "Aquitania" for several weeks' absence in Europe. He was accompanied by Colonel Harold J. Gross of this city and wife, the latter being Colonel Colt's niece. They will spend most of their time in London and Paris, motoring in France and England. The daily paper published on board the Cunard liner printed an interesting account of the celebration of Fourth of July on that steamer, in which Colonel Colt was credited with playing a prominent part, officiating as chairman of the day and toastmaster at the dinner in the evening.

Large shipments of rubber shoes were made the early part of July from the factory of the National India Rubber Co., at Bristol, the goods being consigned to the far West and the Southwest.

At this factory a new system of endless chain conveyors has recently been installed on the front end of the buildings, for the better manipulation of the material in process of manufacture at the plant.

Information has been received at Bristol that William McCaw, former paymaster and assistant treasurer of the National company, has been elected assistant treasurer of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, of which John J. Watson, former treasurer of the United States Rubber Co., and formerly a resident of Providence, is vice president. Mr. McCaw has been connected with the company only a short time, going there as office manager, his family not having yet been removed from Bristol.

The steel stack at the plant of the Revere Rubber Co., on Valley street, this city, has been completed. It was erected in four sections, the base setting upon a steel-supported foundation 30 feet in height. The first two sections of the stack are 35 feet in length and the other two are 30 feet each. The entire stack is 130 feet in height, 7½ feet in diameter and weighs approximately 23 tons. It is attached to the new power plant of the company.

Greeted by a large motor truck filled with the superintendents and heads of departments at the local plant of the Revere Rubber Co., Mr. and Mrs. Arthur H. Carr arrived here June 26 following a honeymoon of about two months in Europe. Mr. Carr is superintendent of the rubber thread department of the plant and was sent to Europe to observe methods in use there and to obtain certain stock which was needed at the plant. Before going away, however, he stole a march on his fellow workers by getting married without announcing the fact to them. This was the reason for the demonstration upon their return home.

The plant of the Revere company, at Atwell's avenue and Valley street, this city, was closed June 26 for the purpose of taking the annual account of stock. The gates reopened July 6 with the prospect of the plant being operated to its fullest capacity and the possibility of having to run overtime in the near future.

* * *

The Perfection Rubber Co., with a capital stock of \$100,000, has filed articles of incorporation with the Secretary of State of Rhode Island. It is to be located in this city and manufacture a patented device known as "The Perfection Sanitary Belt." The incorporators are John B. Desrosiers, Eldrege Desrosiers and John T. Bannon.

Contracts for supplying rubber coats, rubber boots and fire hose for the several fire companies of Bristol were recently awarded by the town council. Charles V. Perry, of Bristol, will supply the boots at \$2.80 a pair; Frank M. Dimond, of Bristol, the rubber coats at \$3.95; the Cornelius Callahan Co., of Boston, 500 feet C. C. C. fire hose, at 70 cents; Combination Ladder Co., Providence, 500 feet wax-treated hose, at 70 cents; Eureka Fire Hose Co., 400 feet, at 65 cents—all to be single jacket hose.

* * *

The Bourn Rubber Co. has decided not to rebuild its factory on Westfield street, this city, that was burned down a couple of months ago, and which contained the wire department. A large building on Westfield street, only a short distance from the Bourn plant, has been temporarily leased by the company and has been equipped to do the work formerly done in the burned building. About 80 per cent. of the

capacity of the old shop is the output of the new quarters to start with, and this is more than double the amount of wire that was being turned out at the time of the fire.

* * *

George R. Stamford, Fall River, has filed suit in the Superior Court in this city against the Cataract Rubber Co., of Providence, for the sum of \$8,000 for alleged breach of contract. The plaintiff claims that he entered into an agreement with the defendant company to sell shares of the capital stock of the concern. He claims he made several sales, the commission for which is still due and that he was discharged without notice on February 1, 1913.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

THE preliminary schedule filed by the State Board of Assessors shows the tax against 8,371 miscellaneous corporations of the State for the year to amount to \$2,544,943. Among the corporations which will pay taxes upon an outstanding capital of \$50,000,000 or over are the American Steel & Wire Co., manufacturers of rubber insulated and other wires, with a capital stock of \$90,000,000, and the United States Rubber Co., with a capital of \$95,693,700.

The report for the year ending May 31 shows that the State Department of Motor Vehicles has received in 1914 for automobile, motorcycle and drivers' licenses \$106,133 more than the total similar receipts for the previous year, the total collection for 1914 amounting to \$600,335, and for 1913 to \$494,202.

The United & Globe Rubber Manufacturing Cos., of this city, are reported to have passed a resolution for a \$50,000 increase in capitalization, this new financing to be employed in the erection and equipment of a tire manufacturing plant.

E. H. Openshaw, who has been assistant general manager of the United & Globe companies, has resigned this position and gone to Chicago to join his wife, who is visiting in that city, and will later spend some time in traveling, having as yet made no definite plans for the future. Before leaving the city he was presented with a handsome twenty-four piece set of cut glass by the employees of the company, as a token of their appreciation and esteem.

* * *

A number of the employees of the Empire Rubber & Tire Co. spent July 3 at Pleasure Bay and nearby coast resorts, going down by automobile early in the morning and returning late in the evening of the same day.

* * *

Edgar M. Church has been appointed sales manager and secretary of the Howard Demountable Rim Co. and will hereafter divide his time between the Philadelphia and Trenton offices of that company, being in the former city until 1 P. M. on Mondays, Wednesdays and Fridays.

* * *

The Red Letter Tire Co. has been formed at Columbus, Ohio, with offices at 20 East Town street, to act as local distributors of Acme Red Letter tires and tubes, the product of the Acme Rubber Manufacturing Co., of Trenton. Leo E. Sulzer is manager of the new company.

* * *

The timely and effective use of garden hose was instrumental in saving to the people of Morrisville, New Jersey, the Baptist church of that town, which caught fire on the night of July 4 from fireworks dropped on the roof. A nearby resident discovered the blaze and neighbors responding to the alarm with their garden hose extinguished the fire before the arrival of the fire department.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent.

THE Savage Tire Co., of San Diego, is about to establish a branch distributing house at San Francisco, California. It will be recalled that in the July number of THE INDIA RUBBER WORLD mention was made of the holding up of a large shipment of rubber and materials belonging to the Savage company through the seizure by the Federals of a section of Mexican railroad. These supplies have since been received in good condition, but the delay occasioned no curtailment of production, for the company, in anticipation of such an event, had telegraphed their Eastern agents to duplicate the shipment, which they did, by fast freight, thus keeping intact the large reserve stock of rubber and other materials constantly maintained at the Savage factory.

Mr. L. C. Miles, formerly associated with the rubber industry at Akron, Ohio, died of apoplexy on June 26 at the Agnew Hospital in San Diego. He was 56 years old and had removed to that city five years ago.

R. V. Terry has been appointed manager of the San Diego sales branch of the Republic Rubber Co., of Youngstown, located at 1070 Third street.

Charles R. Sargent has joined the sales force of the Good-year Tire & Rubber Co., at San Francisco.

R. L. Sergeant, local sales manager of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, and L. M. Jones, northern representative, have recently returned from a seven-day automobile trip through northern California and northern Oregon.

An association comprising an initial membership of sixty tire men was formed at Oakland, California, on July 9. Among the officers elected at the meeting on that date were A. L. Dexter, of the Fisk Rubber Co., vice-chairman, and W. L. Little, a Diamond tire dealer, secretary, while the installation ceremonies were conducted by "Bob" Maitland, a Pennsylvania tire man.

A new distributing agency for Kelly-Springfield tires has been established in Oakland, California, through the opening of the Oakland Speedometer Service Station Co. by L. G. Reno, well known to the trade of that section on account of his previous connection with the Stewart-Warner Co.

The W. D. Newerf Rubber Co., of Los Angeles, which is to distribute the entire product of the Panama Rubber Co., of Compton, California, is understood to be at present arranging for the establishment of agencies through the Imperial Valley.

A natural advantage enjoyed by the Panama company in the production of its tires is the possession in connection with the plant of an artesian well, worth to the company thousands of dollars annually in supplying the large volume of water used in tire manufacture. This well is capable of supplying 81 miners' inches of water through a 12-inch pipe, the pressure being sufficient to throw a 6-inch stream 100 feet high. Its value as an asset is placed at \$50,000.

LIEUT.-COL. ARTHUR F. TOWNSEND.

THE news that Colonel A. F. Townsend has departed for a tropical trip—this time to the rubber planting sections of the Middle East—will not come as a surprise to those who know him. They will quickly recall his many trips to Central America and the West Indies, as well as his rapid journeys through the United States and Europe. For such a live, energetic, wide-awake personage to be caught napping is, to say the least, unusual; yet the proof is produced in the accompanying illustration made from a photograph taken by the editor of THE INDIA RUBBER WORLD off the coast of Nicaragua. Speaking

of that boisterous little republic, it will be remembered that Colonel Townsend some years ago established a fine rubber plantation there. As an adjunct to it he formed a trading company. Then when, for the first time in a century, a hurricane blew the rubber trees away, he sold the land and the trading company, and gave back to the stockholders their original investments. Then he started a plantation in the Middle East, of *Hevea*, and that is what he is at present visiting.

A Boston Latin School boy, and later a student in the Massachusetts Institute of Technology, he began his rubber career with the New York Belting & Packing Co. in 1884, first at the factory, and later at the New York office. His energy and ability carried him rapidly to the front in that important organization. In 1896 he resigned his position, and together with Mr. Frank Cazenove Jones and others formed the Manhattan Rubber Manufacturing Co., of which he became vice-president.

In 1902, on the resignation of Mr. Jones, Colonel Townsend was elected president, and it is largely owing to his wise and energetic direction that the company now holds its enviable position in the rubber trade.

Besides being successful as a business man, Colonel Townsend is prominent in military affairs. He served for several years in the Seventh Regiment of New York, and later joined Squadron A, one of the most famous bodies of troopers in the country. He found the association extremely congenial, and it was not long before he was elected captain of one of the troops. In this position he displayed abilities which soon took him out of Squadron A, and made him Quarter Master General of the State of New York, with the rank of Lieutenant Colonel, which position he now holds.

Colonel Townsend traveled East via the Pacific with Mr. H. U. True, of The Manhattan's Boston agency. They are making a fast trip as far as Singapore, and from there expect to visit Java and inspect the Manhattan plantation. From Singapore they will continue on via Ceylon to England, and thence home.

Mr. E. F. McGovern of the Stoughton Rubber Co., Boston, left for Europe on July 9 by the "Carpathia" of the Cunard Line. During his trip through Great Britain and the Continent he will make a careful study of raincoats. He expects to return the latter part of August.



THE COLONEL CAUGHT NAPPING.

New Rubber Goods in the Market.

THE AIR-SEALED VACUUM JAR.

A RECENT invention looks far to radically change the canning industry and particularly home methods of preserving fruit.

The illustration shows the glass jar and cover, which are of novel form, and the simple pump used for creating a vacuum. The cover fits snugly and evenly on the top of the jar and is provided with a narrow rubber jar ring. It is also notched so that the vacuum can be destroyed by inserting the point of a pin when it is desired to open the jar. The pump is held



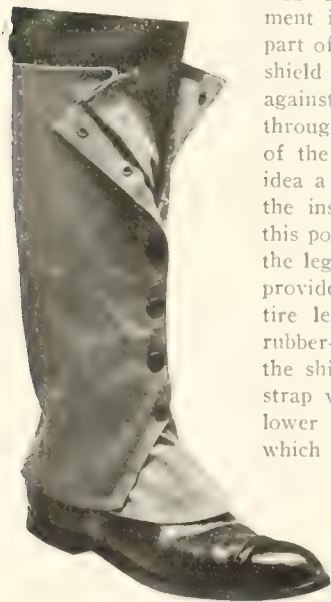
tightly to the top of the jar by a round rubber cap. The flanged end of the pump fits the glass cover, which acts as a check valve.

In preserving fruit it is only necessary to boil it for the purpose of sterilizing it. The fruit is then put in the jar and covered with its syrup. After the glass cover is placed on and the pump attached to the top of the jar by means of the rubber cap, a few hand strokes of the pump will create a vacuum and hermetically seal it. When it is desired to open a jar a pin is inserted between the rubber ring and the side of the cover and the air finds an entry, the cover becoming automatically detached. A portion of the contents can be taken from the jar and the cover replaced, and the jar again sealed by a few strokes of the pump. [The Stoltz Appliances Corp., 220 West Forty-second street, New York.]

A NEW WATERPROOF LEGGING.

A patent has recently been granted to W. E. Woodward, of Malden, Massachusetts, on a new and useful improvement in leggings. The object of this improvement is not only to protect the lower part of the leg and the ankle but also to shield the upper portion of the foot against the access of rain and snow through the laced or buttoned opening of the shoe; and in carrying out this idea a flap or shield shaped to fit over the instep has been provided to cover this portion of the foot, connecting with the leg portion of the legging, which is provided with a tongue extending its entire length. The legging is made of rubber-coated waterproof material, and the shield is held in place by a leather strap which is also connected with the lower extremity of the leg portion and which passes under the foot. One feature of the legging is its ease of adjustment, as it opens in front instead of on the side as is the case with the ordinary legging, and another is the fact that it can be folded

and slipped into the pocket or bag when not in use, occupying only a very small space. [Patent No. 13,747.]



A JAW BRACE OF RUBBER.

Here is a jaw brace designed for use in administering anesthetics in dental work, and in surgical work in the mouth and throat, and of such a nature as to add nothing to the discomfort of the patient. This device is made of flexible rubber, and conforms to any mouth. In adjusting it the ends are brought together between the thumb and finger, and the brace is placed in one side of the mouth parallel with the back teeth, and with the ends to the front. No precaution is needed against the brace slipping down the throat, for when released it will spring out of the month. Among its distinctive advantages is the fact that it occupies only a very small space, leaving more room for the operator. [Dr. A. R. De Pass, Columbia, South Carolina.]



"UNEEK" RUBBER CURTAIN SUPPORTS.

The uses to which rubber may be put in the home are already numerous and varied, but a new one has been devised which is likely to be much appreciated. This is a stout rubber cord for use in hanging curtains, and it has many advantages over the old style brass rod which became unsightly after slight use



and was liable to soil the curtains. The cord is finished with metal ends, and metal pieces are also supplied for attachment to the window frame, the cord, after it has been run through the curtain, slipping into these frame pieces. These elastic supports are quite inexpensive, costing only 10 cents complete per window, are neat in appearance and cannot be broken by rough or careless usage. [Fair Novelty Manufacturing Co., 10 East Fourteenth Street, New York.]

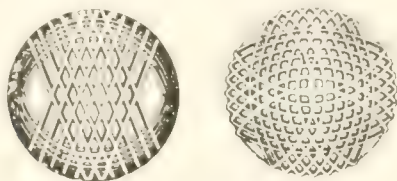
WINGFOOT RUBBER HEELS.

The essential feature of this device is shown in the accompanying illustration. The air cushions give added resiliency and the "safety cups" reduce to a minimum the chance of slipping because the heel has worn smooth. They are made of red and black rubber for every size and style of shoe. The makers think that the "Wingfoot" is the last word in rubber heels and claim for it "the real cushion tread sought for years," absolute safety and "greater-than-leather" wearing quality. [Goodyear Tire and Rubber Co., Akron, Ohio.]



DESIGN FOR A GOLF BALL.

The accompanying drawing shows a new golf ball, the subject of design patent No. 45,741, filed by B. De Mattia, of Garfield, and assigned to the F. A. Cigol Rubber Co., of Paterson—



A NEW GOLF BALL DESIGN.

both in New Jersey. The ball is made with four series of circular ridges extending around it in four directions and interlacing, as shown.

A NEW RUBBER FOOT.

We illustrate herewith an artificial foot made of rubber and steel springs, recently patented in England by B. Graham, of Belfast, Ireland. The entire lower portion of the foot, extending from the heel to the toe, is made of rubber. This part is indicated at *a*. The sole part has flexible steel plates imbedded therein and held together by means of clips. In the heel portion are flexible coil springs to assist in supporting the rubber cushion.

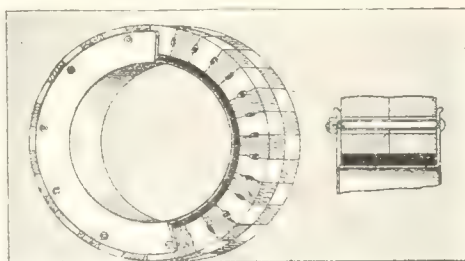


A NEW USE FOR ELASTIC FABRICS.

The insistent demand for a corset which while giving natural and graceful lines will at the same time furnish the desired support, has led to the production of a great variety of elastic corsets, many of which, however, have been found unsatisfactory on account of their tendency to stretch and bulge in spots after a few wearings. This defect, according to the makers, has been completely overcome in the manufacture of the "Smart Set" corset, which is made not altogether of elastic but of "Lastikops" cloth, an open, ventilated weave with interwoven elastic sections, said to be light and cool; to give but not to stretch; which doesn't heat or draw, and which wears like a strong coutil." [Smart Set Corset Co., New York.]

A WOOD AND RUBBER BLOCK TIRE.

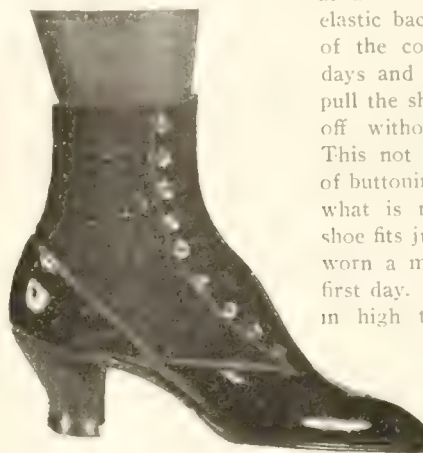
The accompanying drawing shows a novel form of motor truck tire, built up of alternate blocks of wood and rubber. The rim is L-shaped, and has a detachable flange bolted to one side in order to complete the annular trough which receives the tire. A solid rubber ring is provided in the bottom of the trough, as shown in the sectional view, and the blocks are seated upon this. There are two staggered rows of the wood and rubber blocks, which are retained in position by wooden pegs fitting in elliptical slots between them. At certain points the bolts, which hold the side plates together, take the place of the wooden pegs. It is said that this construction provides a tire possessing resiliency and good wearing qualities. The tendency to skid is reduced, and the tread surface is easily renewed when worn down.



This tire is the subject of British patent No. 16,234, recently granted to S. T. Richardson and R. Price.

A WOMEN'S RUBBERIZED VELVET TOP SHOE.

Here is something really new in footwear for women. Apparently it is a nine-button shoe with patent leather vamp and velvet top, but as a matter of fact it is not a button shoe at all as the velvet top has an elastic back similar to the goring of the congress shoe of former days and the wearer has only to pull the shoe on and pull the shoe off without touching a button. This not only saves all the time of buttoning and unbuttoning, but, what is more to the point, the shoe fits just as snugly after being worn a month as it does on the first day. This shoe is made both in high top and low cut style and in lace as well as in button effect. It is being introduced by Lord & Taylor, of New York, and its convenience and trimness should give it immediate popularity.



A LIVE LEATHER AND RUBBER BELT.

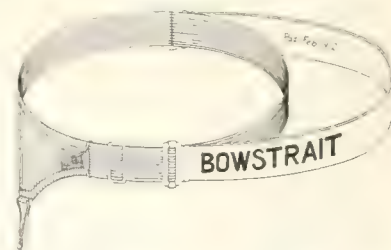
A decided novelty in the way of a belt for men is made of many long parallel strands of rubber thread laid loosely on each



side of an inner fabric strip or base. The cover, which is of leather, is soaked until pliable and then stretched and grained to imitate various leather finishes. The edges are skived, and the cover is then cemented over the rubber thread and fabric base. When finished it presents an attractive appearance, and is agreeably flexible to the wearer. [The Live Leather Belt Co., 78 Walker street, New York.]

ALL CROOKED LEGS MAY NOW BE STRAIGHT.

There is nothing that takes the ardor and ambition out of a man and plunges him into chronic "dumps" like coming into the world with a pair of bow legs. A man may have the heart of a lion and be able to speak six languages but if he has bow legs everybody laughs the minute he comes in sight. But fortunately bow legs are now a thing of the past. Here is the "bow-strait," a simple Pennsylvania invention which puts straight legs and crooked legs all on a par. It is simply a bow of pliable hard rubber fastened at both ends to the garter, the bow projecting out from below the knee towards the other leg. Obviously, the trouser hanging down over this rubber projection is obliged to hang straight, so that the bow-legged man can carry himself with dignity, and nobody know the difference, unless he is one of those people who can't keep a secret and tells it himself. (Cavanagh Bros., Pottsville, Pa.)



THE BOW-STRAIT—A DEVICE FOR PERPENDICULARIZING BOW LEGS.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

News of the American Rubber Trade.

THE MINER CONVENTION AT GRANBY.

FROM all parts of Canada, a goodly company of about 100 selling agents, representatives and branch managers of the Miner Rubber Co., Limited, Granby, Quebec, gathered on June 25 and 26 at the headquarters of the company. Such assemblages are valuable adjuncts to the efficiency of the staff, by the introduction of the personal element. Each member of the party was made to feel at home, owing to the welcome extended by W. H. Miner, vice-president and the other officials, prominent among whom were R. R. Macaulay, secretary-treasurer, and F. H. Meinzer.

The two-hour journey from Montreal on June 25, was made in a special Pullman car, attached to the 9:10 a. m. express; placing the visitors in the best possible shape to enjoy the two days' program ahead of them. After an excellent luncheon, the sales agents and branch managers had private interviews with the management; while the rest of the company were free to dispose of their afternoon in getting acquainted with the picturesque town of Granby.

Next morning was devoted to inspecting the finely equipped plant of the company, commencing with the box and cart

CAPITALIZATION CHANGES.

The authorized capital stock of the Revere Rubber Co., of Revere, Massachusetts, has been increased from \$4,000,000 to \$5,000,000.

The capital stock of the Thermoid Rubber Co., of Trenton, New Jersey, has been increased from \$300,000 to \$750,000. By the amended charter, filed in the County Clerk's office on July 2, the stock of this company is divided into 7,500 shares, of which 6,000 are common and the remaining 1,500 preferred.

The capitalization of the Marathon Tire & Rubber Co., of Cuyahoga Falls, Ohio, has been increased from \$100,000 to \$500,000, and plans are under way for the erection of new factory additions which will enable the company also to greatly increase its production. These will be started as early as possible and will probably be of brick and adjoin the present factory.

The capital stock of the Arrow Rubber Co., of Boston, has been reduced from \$25,000 to \$5,000.

The capital stock of the General Rubber Co., a subsidiary of the United States Rubber Co., has been increased from \$5,000,000 to \$8,000,000.



SELLING AGENTS, REPRESENTATIVES AND BRANCH MANAGERS OF THE MINER RUBBER CO., LIMITED.

department. In the power-plant, which was next visited, the visitors had an opportunity of seeing the automatic underfeed stokers, used only when the water power is insufficient—which is seldom. After taking in various accessory departments, the party were conducted through the crude rubber storeroom down into the calendering room, with its huge rolls through which the various materials pass. One of the special features of the works is the curing apparatus on the ground floor.

Another noteworthy feature is constituted by the facilities existing for loading and shipping, as well as for receiving coal and other supplies.

After a general business session in the afternoon, the party sat down in the evening to a sumptuous banquet, after which they returned to Montreal, highly pleased with the reception accorded them by the company.

Replete with information for rubber manufacturers--Mr. Pearson's "Crude Rubber and Compounding Ingredients."

RUBBER COMPANY DIVIDENDS

The Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, paid on July 10 a regular quarterly dividend of $1\frac{3}{4}$ per cent.

The Swinehart Tire & Rubber Co., of Akron, Ohio, paid on July 15 a dividend of $1\frac{1}{2}$ per cent.

The Killingly Manufacturing Co., a subsidiary of the Goodyear Tire & Rubber Co., of Akron, Ohio, has declared a semi-annual dividend of 3 per cent. on its preferred stock.

The Hood Rubber Co., of Boston, has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock, payable August 1 to stock of record on July 28.

The Canadian Consolidated Rubber Co., Ltd., of Montreal, has declared a regular quarterly dividend of $1\frac{3}{4}$ per cent. on its preferred stock and a dividend of 1 per cent. on its common stock.

The B. F. Goodrich Co., of Akron, has declared a dividend of $1\frac{3}{4}$ per cent. on the preferred capital stock of the company, payable October 1 to stockholders of record on September 18.

THE NEW MULCONROY FACTORY.

The Mulconroy Co. of Philadelphia, has recently erected a new factory at Fifty-fourth and Jefferson streets in that city for the manufacture of its specialties, including its flexible



PLANT OF THE MULCONROY CO., PHILADELPHIA.

metallic hose, couplings, nipples and "7-League" rubber boots with sewed on leather soles. This illustration gives a very good idea of the new factory.

THE WADLEIGH CO., LTD., OF SINGAPORE.

The January number of THE INDIA RUBBER WORLD contained a brief story covering the plans of Mr. W. L. Wadleigh, formerly of Boston, who was about to start at that time for Singapore, where he hoped to make connections by which he could act as representative in New York of the eastern planters and sell their rubber direct to American manufacturers. He sailed for Singapore early in January, arriving there about the middle of February, and he has now returned to this country after having successfully accomplished all that he planned to do. He has established a company at 4 Robinson Road, Singapore, under the name of Wadleigh Co., Ltd., and has also become associated with Dunbar & Co., at 290 Broadway, New York. Through these two connections he will buy rubber from the planters for direct shipment to New York or will act as a commission merchant to sell their rubber to the American manufacturer.

As mentioned in some detail in the January issue, Mr. Wadleigh has had twenty-five years' experience as a commission merchant (chiefly in Boston) and is well acquainted not only with all the large buyers of rubber in the United States but with the requirements generally of the manufacturing trade.

MR. T. W. MILLER HAS AN AUTO. ACCIDENT.

Mr. Thomas W. Miller, president of the Faultless Rubber Co., of Ashland, Ohio, while on his way with a party of friends in an auto, recently, for a short vacation at Mount Clemens, Michigan, met with a painful accident. As the car was going through a tunnel under the railroad track at Chicago Junction it skidded on the pavement where a quantity of oil had dripped from the engines above and struck the curb with such force as to overturn it. Mr. Miller's collar bone was broken and some of the ligaments at the shoulder were painfully torn. It is not expected, however, that the accident will result in any permanent injury.

RUBBER MILLS CLOSE DOWN FOR SUMMER REPAIRS.

The factory of the Candee Rubber Co., at New Haven, closed on July 18 for the customary midsummer machinery repairs. The factory expects to open again on August 10.

The factories of the Boston Rubber Shoe Co., at Essex Fells and Edgeworth, Massachusetts, closed on July 25 for annual summer stock taking. Both of these mills will also re-open on August 10.

SALE OF THE WALPOLE COMPANY AGAIN POSTPONED.

The sale of property of the Walpole Tire & Rubber Co., at Walpole, Massachusetts, scheduled for July 8, has again been postponed until August 12. The postponement was due to an arrangement between the reorganization and the stockholders' committees, the representative of the latter committee informing the court that a plan was on foot whereby the committee would buy in the property, thus protecting both the creditors and the stockholders.

The receivers of the Walpole company have recently filed their second report, which shows aggregate sales for the first five months of the present year to have amounted to \$708,486, on which the profits were \$112,359 gross, \$83,801 net. This report shows the surplus of the Walpole Rubber Co., Ltd., of Granby, Quebec, to be \$27,323, the assets of that company amounting to \$406,442, and places the surplus of the Walpole Shoe Supply Co., whose assets are given as \$342,074, at \$34,688.

TRADE NEWS NOTES.

The Farrel Foundry & Machine Co., of Ansonia, Connecticut, manufacturers of rubber mill machinery, is planning an addition to its plant.

While alterations are in progress at the plant of the Sterling Gum Co., in Long Island City, New York, the headquarters of the company will be located in Greenpoint, Brooklyn, where a large factory building has been leased for this purpose. The additions and alterations planned will increase the capacity of the plant to about five times its present output.

The name of the Detroit Pneumatic Tire Co. has been changed to the Wilson Tire & Rubber Co.

The contract for pneumatic tires and tubes to be used on motor vehicles operated by the Highway Department of the State of Pennsylvania has been awarded to the Pennsylvania Rubber Co., of Jeannette, while the contract for solid tires for use in the same department has been placed with the Gibney Tire & Rubber Co., of Conshohocken.

The officers of the S. & M. Tire & Rubber Co., of Coshocton, Ohio, and the members of the Board of Trade of that city, are reported to have reached an agreement whereby the company becomes the property of the local stockholders. The plant of this company is now completed and most of the machinery installed, but operations have been delayed owing to difficulties in financing.

Work has been started on a new factory building 220x50 feet in area for occupancy by the McNaul Auto Tire Co., at Toledo, Ohio.

The King Rubber Co., incorporated March 31 last under the laws of Massachusetts with a capital stock of \$50,000, to manufacture articles made wholly or in part of rubber, gutta percha, etc., has leased the extensive manufacturing property, fully equipped with rubber machinery, owned by the Hyde Park Rubber Co. and located at 915 Hyde Park avenue, Clarendon Hills, a suburb of Boston. This plant is being remodeled for immediate occupancy.

The Cambridge Rubber Co., of Cambridge, Massachusetts, has been petitioned into bankruptcy at the instance of three creditors, the largest of whose claims amounts to \$11,500, and represents two promissory notes.

A receiver was appointed on July 8 for the Oxford Rubber Co., of Cambridge, Massachusetts, on the petition of Isaac McPherson, of Bridgeton, New Jersey, surety on a contested note for \$4,100 held by the Cumberland National Bank of Bridgeton. The assets of the Oxford company are said to be in excess of its liabilities, which are estimated at \$48,000.

The best of rubber bands can be made by cutting up discarded inner tubes of tires.

THE NEW YORK MACKINTOSH CO. TO MAKE DRUGGISTS' SUNDRIES

The New York Mackintosh Co., with manufacturing factory at Mamaroneck, New York, and salesrooms at 39-41 West 32nd street, New York City, and in the Lytton Building, Chicago, was founded fifteen years ago by Charles A. Place, formerly president of the Metropolitan Rubber Co., and vice-president of the New York Insulated Wire Co. After Mr. Place severed his connection with the above mentioned companies, he started the New York Mackintosh Co. at 114-116 Bleecker street, New York City, in a small way. The business has grown in the past fifteen years so that the company's plant now comprises over 75,000 square feet of floor space.

The plant is equipped for the manufacture of waterproof clothing from the raw material to the finished article. One building is devoted to spreading and calendering, and mill work, and the company has just erected a new building, 50x100, two stories high, for the manufacture of druggists' sundries. All the guaranteed products of the New York Mackintosh Co. are put out under the "Bestyette" trademark, which enjoys an enviable reputation in waterproof clothing circles. The druggists' sundries will be advertised under the same brand name.



PLANT OF NEW YORK MACKINTOSH CO., MAMARONECK.

DESTRUCTION OF THE MEXICAN CRUDE RUBBER CO. PLANT.

Probably our readers will recall the account which appeared in the June number of THE INDIA RUBBER WORLD of the destruction on May 15 of the above plant at Detroit, Michigan, but only recently the report of the coroner's investigations and other data at hand allow a surmise as to the cause of the explosion, which was most severe, and resulted in the loss of life of ten operatives, and the serious injury of six more, out of a total of 27 chemists and operators.

It will be remembered by many that several years ago this company was formed from several mining and land interests in Mexico, and supplied a large quantity of guayule to the American market under the trade mark or brand of "Viesca." It had two guayule plants at Viesca, Mexico, and one at Cadral. Its main offices are at Detroit, and during the time it was active as a rubber producer R. M. Dyar was its president and W. E. Parker its general manager. It appears that the Detroit plant was not at the time of the disaster employed in any way in rubber work, but in the manufacture of artificial leather, using the nitro-cellulose coating process.

The most astonishing thing about the disaster was the testimony of the manager at the coroner's inquest, to the effect that he did not know that nitro-cellulose was explosive. It is evident that in these days of complicated manufacturing processes it becomes necessary to conduct operations under the direction of real experts who are educated for the work and who know the character of the materials they handle. The probability is that the explosion was caused by the ignition of the volatile solvents, which in turn detonated the nitro-cellulose. The explosion tore the fine, isolated steel and concrete building to pieces.

LIQUID CORF GOLF BALL.

A company that has been quite successful in making golf balls in the United States, which advertises itself as making "the only Liquid Golf Balls on the American Continent," is reported to have been sued by a caddy for injury to his eye through the bursting of one of the company's balls. According to common report the ball was filled with acid. This did not seem reasonable, therefore one of the staff of THE INDIA RUBBER WORLD, who is a chemist, took occasion to purchase a ball and discover its fluid contents. There was no acid, but, on the other hand, it was not pure water. The report of the chemist, briefly, is:

"I find it to weigh 42.120 grams (1.5 ounces). On boring into it I obtained 1.3 c.c. of liquid, which weighed about 2.34 grams, giving a specific gravity of 1.8. The liquid was a concentrated solution of zinc chloride, with no sulphate. It was in a solution of about 65 per cent. zinc chloride. Owing to the small quantity of liquor the results are not as reliable as might be obtained under better conditions, but this is approximately correct. The zinc chloride was slightly alkaline to methyl orange, though strongly acid to phenol phthalein. This means that there was a slight amount of zinc oxide dissolved in the chloride. The specific gravity of the whole ball was 1.023. The liquid was about 5.5 per cent. of the total weight of ball. On cutting the ball with a saw, when it was about half cut it sprung open and a mass of rubber bands under high tension was exposed, and an inside ball formed of a large number of laminated sheets sprang out. The outside of the ball was painted red, and had a rough surface. Beneath this was a thin, tough, white skin; then about 1/16 inch of a black rubber casing; after which came the rubber bands or strings, and the inside ball was about one-half the diameter of the outside. It is possible that the liquor was held in the inside ball in the laminated films and did not touch the outside bands, but they were wet when I opened the ball, though this might have been due to the wall being bored into."

In justice to the manufacturer it is only fair to say that all they were trying to do was to make one of the most resilient balls possible; that it was an exceedingly good ball, and that accidents, if they did occur, were rare events. The report is that this type of ball has been withdrawn from the market.

MILLER RUBBER CO.'S NEW STOCK ISSUE.

The Miller Rubber Co., of Akron, has recently issued new 7 per cent. cumulative preferred stock to the amount of \$500,000, of which \$400,000 is said to have been purchased by brokers in Cleveland, this being the total amount of preferred stock outstanding. The common stock outstanding amounts to \$1,000,000. The new issue is redeemable at 120, and restrictions are provided that no mortgage or other lien nor any new issue with prior or equal rights shall be effected without the consent of 80 per cent. of the outstanding preferred stock; while a sinking fund provides for the retiring of \$25,000 par value annually. The total tangible assets of the company, after deducting all debts, are said to be \$1,654,000.

PERSONAL MENTION.

Mr. Henry C. Pearson, editor of THE INDIA RUBBER WORLD, has sailed for the Far East, to attend the Rubber Congress to be held at Batavia, Java, next month. This meeting of eminent rubber scientists and experts will result in much interesting and important information for those interested in plantation rubber.

Mr. J. C. Brady, a director in the United States Rubber Co., has been elected a director in the United States Cast Iron Pipe & Foundry Co., to succeed his father, the late Anthony N. Brady.

Mr. George Watkinson, that sturdy purveyor of Emax, whose exhibit attracted so much attention at the recent rubber exhibition, sailed for New York, July 11.

Mr. Clarence H. Loewenthal, secretary of the United States Rubber Reclaiming Co., whose stand at the London exhibition was the centre of so much interest, started in the middle of July for a tour of Switzerland with the avowed object of doing some mountain climbing, and Mr. L. D. Plum, chemist of the same company, is making a business tour of the Continent and expects to return to New York about September 1.

Mr. Frank Venn, of Malden, Massachusetts, has been touring the Provinces and is now on the Continent in the interest of his rubber boot and shoe numbering machines, so generally used in America and Canada, and for which a substantial request has already been developed in Europe.

Consul General Julius G. Lay, formerly stationed at Rio de Janeiro, Brazil, has been transferred to Berlin.

Commodore E. C. Benedict was one of the twelve lifelong friends of the late James McCutcheon, New York linen merchant and banker, who acted as honorary pallbearers at his funeral on July 23, at Greenwich, Connecticut.

William M. Ivins, well known to the rubber trade, with which he was formerly associated, as president of the General Rubber Co., has been retained by William Barnes as counsel in his \$50,000 libel suit against Theodore Roosevelt, service of summons in this suit having been effected by his son, James S. Y. Ivins, on July 23.

Frederick D. Clayton, treasurer of the Goodyear Manufacturing Raincoat Co., of 15 East Sixteenth street, New York, has been made defendant in a suit brought by House, Stowe & Co., to recover \$10,052, the amount of credit which they claim he obtained for his company through false statements.

James Brien, of Needham, Massachusetts, owner of the Eastern Rubber Co., with offices at 72 High street, Boston, died on June 30 in a hospital in Detroit, where he had gone on business connected with his branch office in that city. His death was the result of an automobile accident two days earlier, when a machine in which he and his brother, Christopher Brien, associated with a Detroit rubber concern, were riding was struck by a street car. Mr. Brien was 48 years old and is survived by his wife.

Mr. Edward Hughes, formerly employed for fifteen years with the Mechanical Fabric Co., of Providence, Rhode Island, and for ten years preceding that period with the Revere Rubber Co., of Chelsea, Massachusetts, has been appointed manager of the rubber thread department of Dr. Cassirer & Co., Charlottenburg, Germany.

Mr. Frederick W. Dunbar, of the importing firm of Dunbar & Co., returned to New York on July 31, after a month's stay in London.

Mr. William A. De Long, who has been engaged for more than a year in settling up the affairs of the New York Commercial Co., returned to New York on July 27 from a business trip to Seattle, Washington.

L. E. WATERMAN.

There is an exceedingly interesting story, in fact a real industrial romance, back of the fountain pen industry in this country. Nearly thirty-five years ago a man who had had a little experience at a good many things (among them school teaching), conceived the idea of a pen that should also contain within itself the ink, so that whenever you had one you would not have to search for the other, came to New York to give this idea practical shape. He found, however, that at least 200 other people had entertained this same conception and that there were about that number of fountain pens already patented. But none of them would work. He examined them diligently and minutely, found where the trouble lay and then devised a new fountain



THE LATE L. E. WATERMAN, FOUNDER OF THE
L. E. WATERMAN CO.

pen that should avoid the defects of earlier patents. He made some of his new pens and rented desk space in a cigar store on Fulton street near the Brooklyn bridge.

That was in 1883. During the first year he sold 6 dozen pens. This small sale would have discouraged most men, but Mr. Waterman—Lewis Edson Waterman—was not easily discouraged. He knew his pen was good and would sell as soon as other people found out how good it was. And he was right. He kept on, and in five years the sales had reached an annual figure of 9,000 pens—not a very big sale and yet not bad. Twelve years later, in 1900, the sales had almost reached the quarter million mark—which was much better—and last year a million and a quarter of the Waterman fountain pens were marketed—something of a jump, certainly, from that first annual output of 72 pens.

Here is a reproduction of a photograph of the late Mr. Waterman, who more than any other man made the fountain pen the great institution that it is today, and who not only introduced a very acceptable convenience for the use of the commercial world but incidentally opened up a channel for the use of a considerable volume of rubber every year.

Henry Metcalf, Arthur C. Goff and Charles L. Cate are the owners of the Rubber Specialty Co., doing business in Pawtucket, according to statements filed with the city clerk of that city.

COLONEL COLT INTERVIEWED IN PARIS

Colonel Samuel P. Colt, president of the United States Rubber Co., accompanied by Mr. and Mrs. Harold J. Gross, sailed for Europe on the "Aquitania" July 1. Colonel Colt expects to be absent until about September 1, and will visit London, Paris, Amsterdam and Aix-les-Bains, combining business with pleasure. The daily papers of recent date contained an interview which Parisian reporters obtained from Colonel Colt when he arrived at that city. According to this account he predicted that crude rubber would go still lower in price.

"The rubber trade," he continued, "is satisfactory. Our company has always been conservatively run; we have transgressed no law, therefore fear no Federal prosecution. It is regrettable that American statesmen have not yet attacked the trust problem scientifically. President Wilson is very disappointing in this respect."

MR. HERMESSSEN LEAVES MEXICO FOR ECUADOR.

The readers of THE INDIA RUBBER WORLD will remember the many exceedingly interesting letters contributed to the columns of this publication by Mr. H. S. Hermessen, for many years resident in Mexico. Owing to the disturbed condition of affairs in that republic, which has interfered so much with every line of industry, Mr. Hermessen has left Mexico and gone to Guayaquil, Ecuador, where he has taken a position as chief engineer of the survey of the Trans-Amazon Railway of Ecuador—a line destined to run from Puerto Bolivar, on the Gulf of Guayaquil, to the Amazon, via Zaruma and Loja. This railroad is being built by a French syndicate.

RUBBER MEN IN A NEW FOREIGN TRADE CLUB.

Colonel Samuel P. Colt, president of the United States Rubber Co., and Mr. Elisha F. Williams, one of the vice-presidents of that company, are both members of the organization committee of the "Indian House," a new club located at 1 Hanover Square, New York, organized for the purpose of extending American foreign trade. Among the other members of the organization committee are Lloyd C. Griscom, E. P. Thomas, Charles A. Schieren and Albert H. Wiggin. The officers of the club are as follows: James A. Farrell, president of the United States Steel Corporation, president; J. P. Grace, president of W. R. Grace & Co., treasurer; Willard Straight, of J. P. Morgan & Co., secretary; Edwin N. Hurley, president of the Machine Co. of Chicago, and James R. Morse, of the American Trading Co., vice-presidents.

MR. MACMILLAN CHAIRMAN OF THE RUBBER GOODS SECTION.

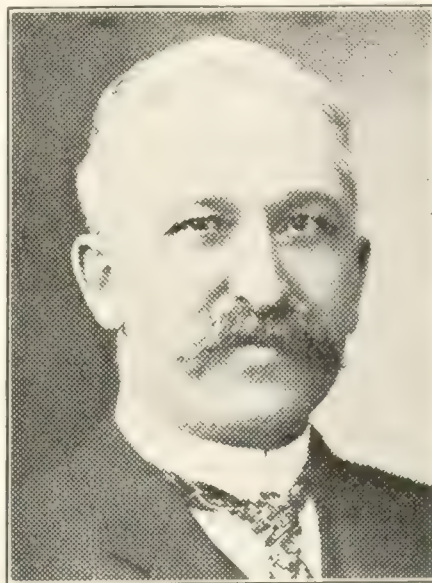
Everybody has heard of the Rotary Club. It is a great international organization with a club in every considerable city. These individual clubs are composed of representative men in the different professions and lines of business, no profession or business being permitted more than one representative in a club. The organization held an international convention in Houston, Texas, late in June, and Mr. John A. MacMillan, general manager of the Dayton Rubber Manufacturing Co., served as chairman of the rubber goods section and presided over the discussions held by the rubber men attending the convention.

DEATH OF G. O. CURRIER.

Mr. George Odin Currier, who died, at the age of 71, at his residence in Jamaica Plain, Massachusetts, on June 27, had never been directly engaged in rubber manufacture or distribution. He, however, played an important part for a great many years in the development of the rubber industry of New England as a note broker; and during the last forty years of his life he had made a specialty of the notes of the large New England rubber companies. In this way he had an extensive acquaintance not only among financiers but among the leading rubber men of that section.

PRESIDENT SCHAFFER OF THE GLOVE COMPANY.

There is nothing in the old adage that "All things come to those who wait." They don't. Things come to those who work. And that has been proved again by the experience of Mr. Frederick F. Schaffer, who has just been elected president of the Goodyear's



FREDERICK F. SCHAFFER

India Rubber Glove Manufacturing Co. There never was an honor more deserved.

Mr. Schaffer began his career as a manufacturer of rubber when he was a young boy, back in the late 60's, in the factory of the New Brunswick Rubber Co., situated in the town of that name in New Jersey. After acquiring a little experience in this factory he changed, in 1870, to the New Jersey Rubber Co., located in the same town, where he soon was appointed foreman of the shoe making department. Six years later, in '76, the Goodyear Glove Co., Naugatuck, concluded to add a shoe department to its plant and Mr. Schaffer was invited there to take charge of it; and he has been with this company for thirty-eight years, during which time "glove" footwear has become famous the world over. After acting as foreman of the shoe department for nine years he was made superintendent—in '85—of the entire plant; and not very long after that he was handed the Wales-Goodyear factory, situated in the same town, to superintend, additionally. A few years later he was made secretary of the Glove company, and still later became its treasurer; and now he succeeds to the presidency.

He has given up the superintendency of the two mills, his son, Frederick W. Schaffer, becoming superintendent of the Glove company plant, and Myron H. Clark, of the Boston Rubber Shoe Co., becoming superintendent of the Wales-Goodyear mill.

One might imagine from his long career in rubber manufacture that Mr. Schaffer was fairly along in years, but it must be recalled that he got to work when the other boys of his age were still droning over their First Readers. There are two proofs that he is still in his prime—one is his great capacity for work, and the other is this cut of a photograph which was taken of him very recently.

The S. & S. Automatic Tireaze Co. has been incorporated in Marysville, Kansas, with a factory at Frankfort in that state, for the purpose of manufacturing an automatic jack for automobiles.

NEW INCORPORATIONS.

Alden Rubber Co., June 3, 1914; under the laws of Massachusetts; authorized capital, \$100,000. Incorporators: George Edwin Alden, Needham; Clarence W. Hoyt, Lowell, and Benjamin E. Phillips, Dedham—all in Massachusetts. To manufacture and deal in rubber and rubber goods and supplies of every kind.

American Para Rubber Co., June 15, 1914; under the laws of Missouri; authorized capital, \$10,000. Incorporators: G. A. Wilke, F. E. Rixmann, G. W. Houghton and Wm. C. Lange—all of St. Louis, Missouri. To manufacture rubber goods of every description and to buy and sell rubber products, etc.

Best Tire Co., December 5, 1912; under the laws of New Jersey; authorized capital, \$125,000. Incorporators: S. L. Henry, Martin Walker and Edward Spillane—all of Newark, New Jersey. To manufacture and sell automobile and all kinds of vehicle tires, and to buy and sell tire patent rights, etc.

Columbia Tire Co., June 24, 1914; under the laws of California; authorized capital, \$500,000, in shares of \$1 par value each. Incorporators: Ed. Troan, W. B. Lee, H. W. Griswold and P. L. Huse—all of Los Angeles, California. To manufacture and deal in tires and autos.

Crown Tire & Supply Co., June 17, 1914; under the laws of Delaware; authorized capital, \$100,000. Incorporators: I. W. Thompson and D. S. Edmonds—both of Philadelphia, Pennsylvania—and J. M. Frere, Wilmington, Delaware. To manufacture and deal in automobiles, automobile tires, etc.

The Enterprise Tire Shop; June 22, 1914; under the laws of Connecticut; authorized capital, \$25,000. Incorporators: Henry J. Bond, of Stamford, and Claude L. Post, of New Canaan—both in Connecticut.

Goodrich Raincoat Co., Inc., July 13, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Harry Rosenberg, Chas. Becker and Max Becker—all of 840 Broadway, New York City.

Indestructible Tyre Co. of the United States, July 3, 1914; under the laws of Delaware; authorized capital, \$1,000,000. Incorporators: John McLaren, F. B. Knowlton and S. V. Dowling—all of 154 Nassau street, New York City. To manufacture, purchase, sell and deal in tires for vehicles—pneumatic or otherwise—made wholly or partly of rubber, metal, cloth or any other material.

Long Wear Reliner Co., Inc., July 8, 1914; under the laws of New York; authorized capital, \$10,000. Incorporators: Thomas P. Octigan, 105 West Monroe street, Chicago—Albert T. Norton and Mary T. Norton—both of Port Jefferson, New York. To deal in rubber goods, tires, etc.

Nichols Manufacturing Co., July 7, 1914; under the laws of Delaware; authorized capital, \$50,000. Incorporators: Arthur H. Tyler, Riverside; Charles A. Wright, Providence, and O. Z. Peterson, Cranston—all in Rhode Island. To manufacture jewelry of all kinds, rubber novelty goods, rubber of all kinds, celluloid and celluloid novelties.

Pacific Rubber & Tire Manufacturing Co., May 18, 1914; under the laws of Washington; authorized capital, \$25,000. Incorporators: C. A. Kilbourne, H. C. Ewing, E. L. Webster and Arthur M. Griffin—all of Seattle, Washington. To buy and sell automobiles and auto accessories, also rubber tires and rubber accessories of all kinds.

Prenzel Sectional Pneumatic Tire Co., June 22, 1914; under the laws of Pennsylvania; authorized capital, \$250,000. Incorporators: A. H. Prenzel, Luther E. Ryan, L. Samuel Marshall—all of Halifax, Pennsylvania—and Frank B. Clayton, Lewisburg, Pennsylvania. To manufacture and sell vehicle tires and other rubber products.

Puncture Seal Co., Inc., June 25, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Henry

D. Bahn, 314 East One Hundred and Thirty-seventh street; Frank S. Murray, 400 West Fifty-seventh street, and Frank Eber, 1313 Clinton avenue—all in New York City. To manufacture compounds for mending inner tubes, tire accessories, etc.

Western Tire Co. of America, Inc., June 26, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: L. Walter Lisberger and Joel Jacobs—both of Wellington Hotel—and Frank H. Cross, 1650 Broadway—all in New York City. General tire business.

TRADE NEWS NOTES.

The National Association of Waste Material Dealers has established headquarters in Boston, at 170 Summer street, in charge of C. M. Haskins and Mark Sherwin, respectively secretary and treasurer of the association.

Bids are now being received, through D. A. Crone, an architect, with offices in the Oliver Building, Pittsburgh, on a factory building 82 x 250 feet, two stories and basement, at Niagara Falls, for the Santo Rubber Co.

Fan ventilators, 48 inches in size, have recently been installed in the boot and shoe department of The B. F. Goodrich Co., at Akron, by The Burt Manufacturing Co. of that city.

The property loss by fire in the United States during the year 1913 amounted to \$203,763,550.

The plant of the Leicester Rubber Co., of Catsauqua, Pennsylvania, was destroyed by fire on the morning of July 19, entailing a loss of approximately \$60,000. The origin of the fire, which started outside the plant, is not known, and only a small amount of insurance was carried. The company manufactured a line of rubber mats and other rubber goods, and I. Fineburg, of the Trenton Scrap Rubber Supply Co., of Trenton, New Jersey, is said to have been the principal owner, while H. Bernstein, also formerly of Trenton, was manager.

Employees of the Seamless Rubber Co., of New Haven, Connecticut, to the number of forty-five, held their annual outing on Saturday, July 18, at Smith's South End grounds. The outing, which was an extremely successful and enjoyable one, was also attended by superintendents and officers of the company. An interesting feature of the event was the shore dinner served at 3 o'clock. Prizes were offered and awarded in numerous athletic contests, and a baseball game between male and female participants resulted in the astonishing score of 14 to 4 in favor of the latter.

A banquet was served at the Baltimore Hotel, Kansas City, Missouri, on the evening of July 17 to about eighty members of The B. F. Goodrich Co.'s force employed in that city and vicinity, who had gathered to discuss plans for the standardization of business, and for the elimination of cut throat competition. Representatives of the Akron office of the company were present at the banquet, at which R. L. Rickey, manager of the Kansas City branch, presided.

The forty-second annual meeting of the Carriage Builders' National Association will be held in Atlantic City, New Jersey, during the week commencing September 27.

A HUDSON RIVER CABLE 16,000 FEET LONG.

The longest submarine cable ever laid by the New York Telephone Co. is one that extends under the Hudson River from Nyack to Tarrytown. It is 16,000 feet long. Because of the length of this cable and the shallowness of the river at both sides, it was necessary to use a scow drawn by a light draught tug. The cable was placed on the deck of the scow in the shape of a gigantic figure eight, so that it could be fed down into the river without kinking. A strong brake was placed on the stern of the scow to prevent the cable from running overboard. This great length of cable was laid in less than an hour and a half.

New Machines and Appliances.

DIES FOR PRESSED RUBBER COMBS.

WHEN hard rubber stock in a plastic condition is pressed between comb forming dies of the usual construction, it is impossible to force by pressure from between the dies all of the material not required in the comb. This is one of the reasons why so few rubber combs have been formed entirely by stamping out in dies, with the comb teeth completely formed by a single operation.

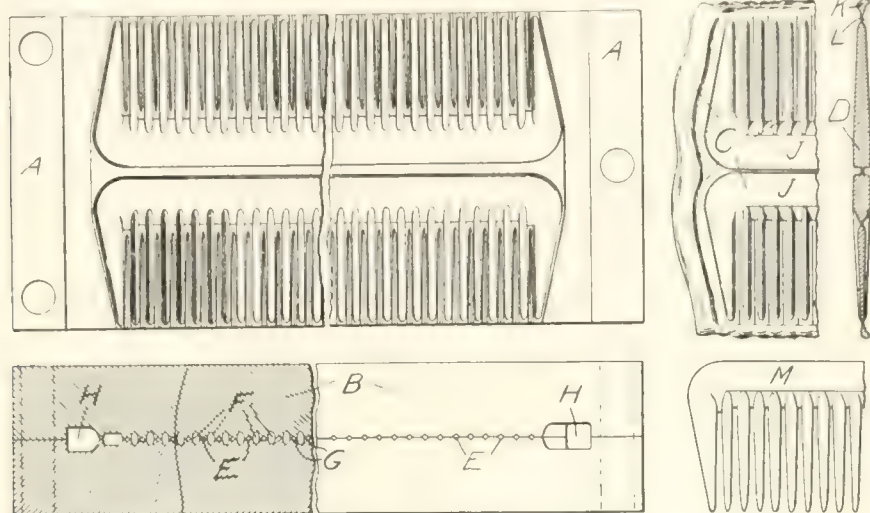


FIG. 1. WIELAND'S HARD RUBBER COMB DIES.

In an invention of F. Wieland's, the stock is pressed between dies arranged to form a comb blank, in which all of the teeth are practically of the desired final shape and size. The superfluous stock that remains between the teeth and at the ends and sides is connected to the comb by thin webs which are easily broken away. Reference to the accompanying drawings in connection with the following description will give an idea of the construction of these dies and the manner in which the comb is formed.

In Fig. 1, *A* is a plan view of the lower half of the die and *B* is a partial cross section and part exterior view of the upper and lower halves. *C* shows the shape of the rubber blank after it has been pressed and removed from the dies and *D* is a cross section of the same blank. The dies are formed so that when the two halves are placed together, spaces *F* are left for the teeth. Between these spaces are smaller spaces *E*, which receive the surplus material pressed out from spaces *F*. The parts of the dies which separate the spaces *E* and *F* are formed with sharp edges *G*, so that when the dies are pressed together the surplus rubber in spaces *E* is separated from that in spaces *F* by a very thin web, which is afterward easily broken away. The dies are also grooved at *H* to receive the excess material pressed from the ends of the comb blank.

With this die the stock to form the comb may be of much less thickness and width than that of the finished product. The stock from which the comb is formed is materially thickened and spread laterally during the pressing operation, filling up spaces

where necessary and squeezing out surplus material where not needed. The surplus material squeezed from the center of the stock to form the web between the backs of the combs, is forced into the hollow spaces of the die to form the backs *J*. The surplus rubber not needed for the comb teeth is forced out at the edges as shown at *K*, and is connected with the comb blank by thin webs *L*. The two comb blanks arranged back to back are easily broken apart and the superfluous stock removed by breaking off the thin webs. The combs are then finished by buffing. The drawing *M* shows the form of the completed comb.

Fig. 2 shows another form of mold for producing twinned combs with interlocking teeth, which are connected by thin webs. A plan view of the lower half of the die is shown at *A* while *B* shows a partial cross section of both the upper and lower halves. *C* is an end view of the dies, showing the relative shape and size of the rubber stock *D* before being pressed. *E* shows the comb blank after being pressed and shows how the material completely fills up the spaces to form the comb back and teeth. The teeth in a comb formed by this die are necessarily closer together than in the die shown in Fig. 1 and the cutting edges of the opposing dies are necessarily sharper and deeper. When the two dies are pressed together the rubber is first forced longitudinally and then across the dies, or along the tooth spaces toward the back of the comb.

In pressing combs with a die of this shape the large end teeth *F* are bent out of their normal position to provide a receiving space for material to form the teeth *G*. After the combs have been separated by breaking the thin webs which connect them, the end teeth *F* are forced by the application of heat and pressure back to their normal position, after

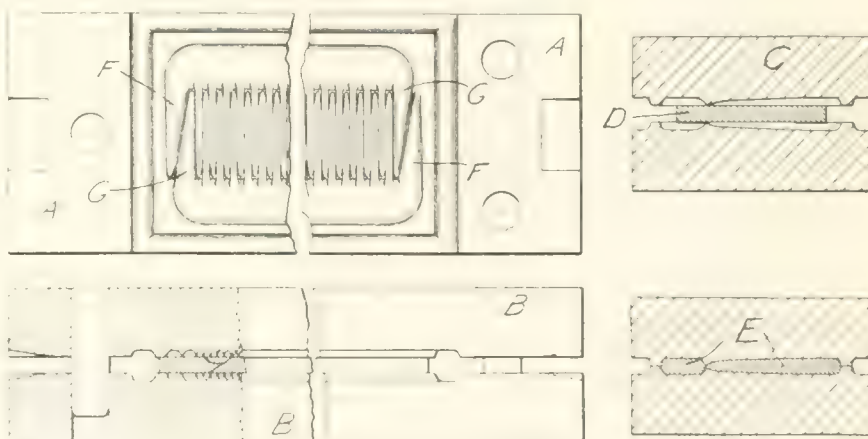


FIG. 2. DIES FOR FORMING TWINNED RUBBER COMBS.

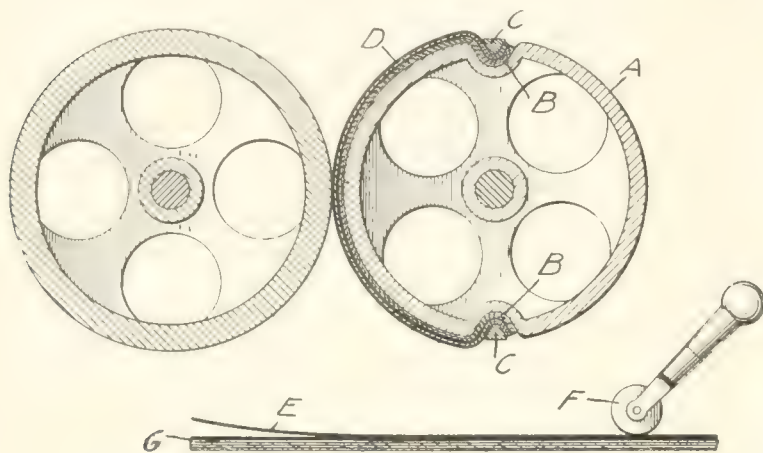
which the combs are ready to be finished by a buffing wheel.

The Werner & Pfleiderer Co., Saginaw, Michigan, is making a new machine, the Universal Mixing and Kneading Machine, designed especially for use in the manufacture of chewing gum. The machinery for this industry has heretofore been adapted from other lines and changed to suit the different requirements.

RE-SURFACING PRINTERS' BLANKETS.

ONE of the latest items of expense in connection with printers' and lithographers' presses has always been the replacing of the rubber blankets. According to a new process, patented by Gustave Kush, of New York City, old blankets may be re-surfaced with a covering of new rubber, thus considerably decreasing the expense of supplying blankets.

Rubber press blankets made in the usual manner have a backing of fabric and a covering of rubber vulcanized together at the factory. If the rubber surface becomes creased, pitted or otherwise worn, the blanket no longer meets the requirements of perfect work, and must be discarded. In order that the rubber



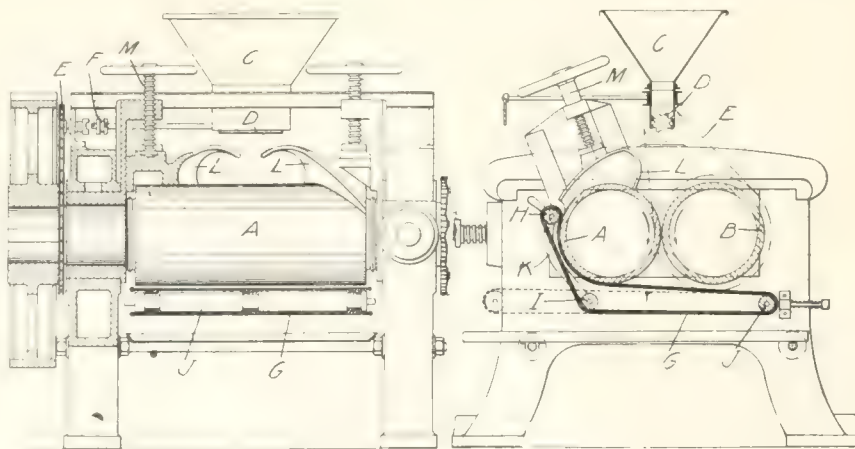
KUSH'S PROCESS OF REPAIRING PRINTERS' BLANKETS

surface may be stripped from the fabric, the new blanket has a thin layer of unvulcanized rubber between the fabric and the exterior vulcanized cover. In the accompanying drawing, the blanket roll A has two grooves B, in which the blanket is clamped by bars C. When the blanket becomes worn, these bars are removed, the blanket taken from the roll, and the outer covering D stripped off. A new sheet E of rubber of the proper size is then cut and rolled smoothly, by means of a hand roller F, over the surface of unvulcanized rubber G. The blanket is then as good as new, and it is quickly replaced on the roll, obviating the loss of time necessary with the older method of taking down the roll and attaching an entirely new blanket.

A MIXER THAT ELIMINATES MANUAL LABOR.

WE illustrate herewith a new rubber mixer which has an attachment for continuously turning the rubber over as it passes between the rolls, thereby eliminating the manual labor necessary with the usual type of two-roll machine. This mixer also has an adjustable apron which catches the unmixed ingredients and carries them back to the upper part of the rolls to be mixed with the rubber.

The two drawings of the machine show an end view and a side elevation, both partly in section. The machine has two horizontal rolls A and B, the first of which is steam-heated. Above the rolls is a hopper C, having a sufficient capacity to hold all of the ingredients except the rubber, for one batch. At the bottom of the hopper is a cylindrical distributor D, driven by a chain E. This device distributes the powdered ingredients over the rubber as it passes down between the rolls. The distributor may be started or stopped by operating a clutch F.



OLIER'S MIXING MACHINE.

In order to catch and carry back the unmixed ingredients to the roll A, an endless apron G is carried upon rollers H, I and J. The roller H is mounted upon two side arms K, which swing around the axis of the roller I, so that the apron may be raised in contact with the roll A, or lowered into a horizontal position, as indicated by the dotted lines. When the apron is raised it is driven by friction, and the ingredients caught by it are carried to the top of the roll A, and again passed through the mixer with the rubber.

At the ends of the roll A are two blades L, shaped like plowshares. They may be raised and lowered by means of hand-screws M. When lowered in contact with the roll A they continuously scrape the rubber from the roll and turn it over, so that fresh surfaces are exposed to take the compounding ingredients falling from the hopper. By means of this uninterrupted overturning of the gum, effected mechanically and without manual assistance, it is said that a homogeneous mixture can be obtained in a remarkably short time.

This mixer is the subject of United States patent No. 1,100,768, granted to André Olier, of Clermont-Ferrand, France.

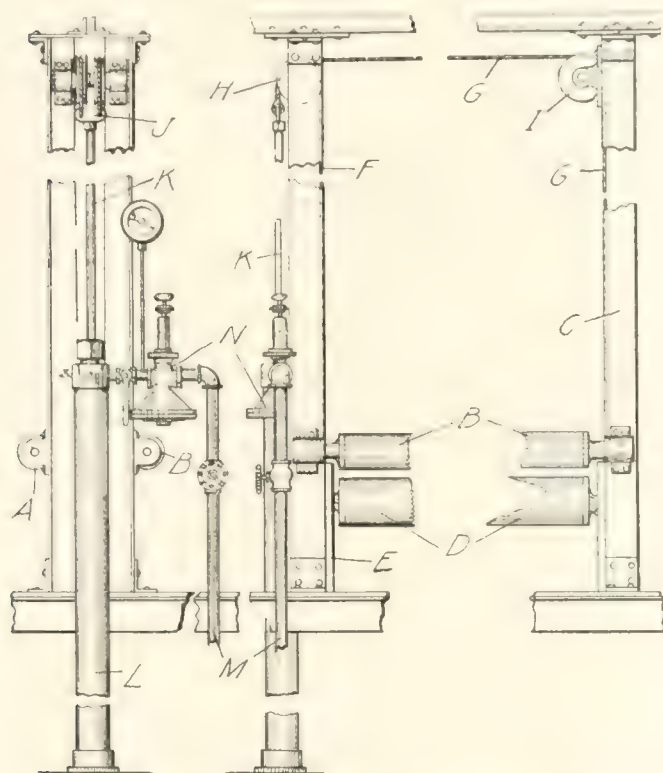
A TENSION DEVICE FOR CALENDERS.

IN the specifications of a recent patent is described a device for maintaining an even tension on a strip of fabric passing from a supply roll to the calender, or from one calender to another. Referring to the accompanying drawings, which show an end elevation and a side view of the apparatus, it comprises two idler rolls A and B attached to the opposite sides of the frame C. Between these two rolls is a third roll D mounted in carriages E, which slide up and down between the frame members. This sliding roller is raised and lowered by means of cables F and G, attached to the carriages E, and passing over sheaves H and I. These cables are secured to a cross-head J at the upper end of a piston rod K. On the lower end of this rod is a piston, which reciprocates in a hydraulic cylinder L. Water enters the cylinder through a pipe M, and the pressure is controlled by a regulator N.

The operation of the device is as follows: The fabric is carried under the roll A over the sliding roll D, and under the roll B. During the movement of the fabric over these rolls

the regulator N is set to maintain a pre-determined pressure on the piston in the cylinder L. The result is to force the piston down, to raise the sliding roll D, and to impose an even pressure on the fabric passing over the rollers. For instance, if any slackness occurs in the fabric while passing to the calender, the roll D raises, and the pressure on the piston causes the surplus

fabric to be taken up. On the other hand, if the strain on the fabric is greater than the pressure permitted by the regulator, enough air will leak past the piston to permit the roll to move downward, relieving the tension on the fabric.

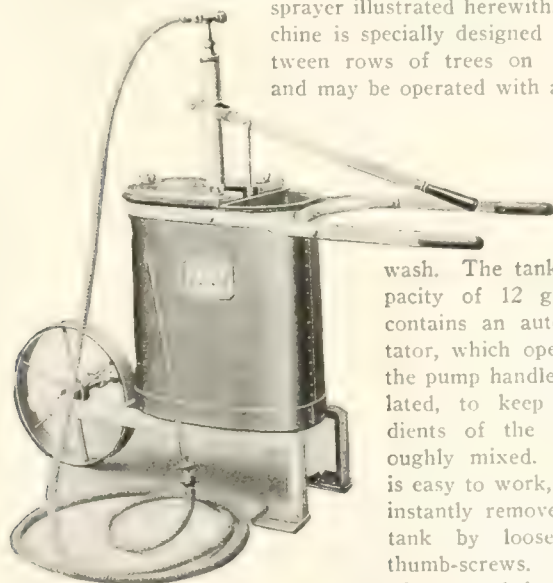


APPARATUS FOR REGULATING THE TENSION IN FABRICS.

The patent is No. 1,100,039, granted to Wm. C. Tyler and Edward Nall, and assigned to The Goodyear Tire & Rubber Co., of Akron, Ohio.

THE "FOUR OAKS" SPRAYER.

Among the machinery and appliances shown at the recent International Rubber Exhibition in London was the "Four Oaks" sprayer illustrated herewith. This machine is specially designed for use between rows of trees on plantations, and may be operated with any kind of

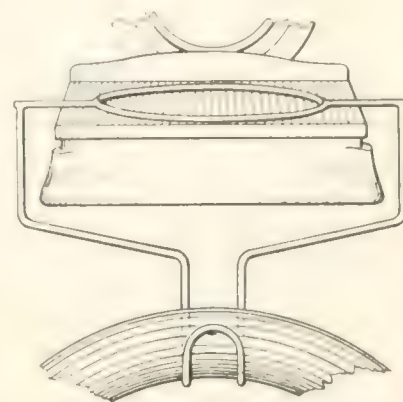


wash. The tank has a capacity of 12 gallons, and contains an automatic agitator, which operates when the pump handle is manipulated, to keep the ingredients of the wash thoroughly mixed. The pump is easy to work, and can be instantly removed from the tank by loosening three thumb-screws. Fifteen feet of armored hose and two

nozzles are supplied with each machine. [The "Four Oaks" Spraying Machine Co., Sutton Coldfield, Birmingham, England.]

A DEVICE FOR THE CONVENIENT WEIGHING OF TIRES.

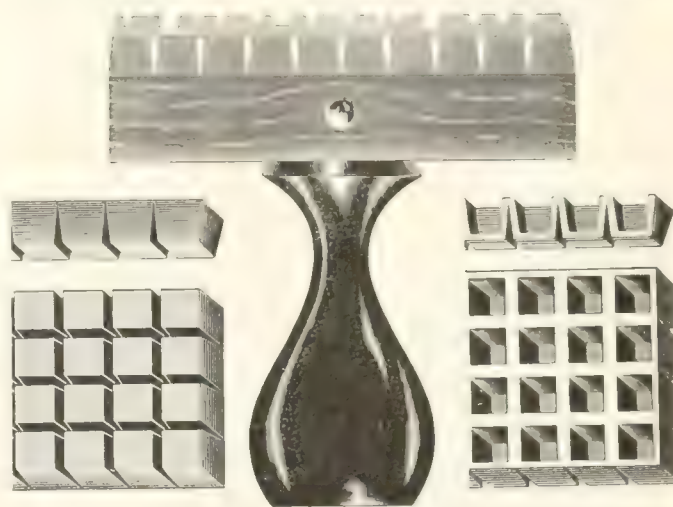
The drawing shows a method used in a number of rubber factories for weighing such articles as tires which are not conveniently placed upon the ordinary scale platform. From the drawing it will be seen that the device consists merely of a hook made from heavy wire and bent in such a way that it hangs from the platform of the scale without interfering with the balance. With the device attached to the scale it is only necessary to hang the tire on the hook and obtain the total weight of the hook and tire together, after which the weight of the hook is subtracted. In order to eliminate this trouble the scale may be previously balanced with the hook so that the weight of the tire is obtained directly.



SHOWING HOW TIRES CAN BE WEIGHED ON THE ORDINARY SCALE.

THE "UNIVERSAL UNIT" CUSHION STAMP.

The efficiency of a rubber stamp is considerably increased by mounting the type on a flexible cushion. There are several types of cushion stamps, but the latest design, illustrated herewith, has been introduced by The R. H. Smith Manufacturing Co., of Springfield, Massachusetts. The cushions are molded in the shape of hollow pyramids, open at the lower ends and connected at the bases by thin walls. The sheet is separable at



any point and in either direction, making a cushion of any required size to fit any shape of die. When the units are separated a finished edge is left at the base of the cushion, and there is no waste of rubber.

In the illustration, the figure on the left shows the tops of two sections, while that at the right shows how the cushions are hollowed out. The central figure shows the sheet of type attached to the cushion, which is mounted in the usual manner upon a wooden block and handle. The cushion is made in sheets 10 inches square, each containing one hundred units—a form very convenient for the stamp manufacturers.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

The Editor's Book Table.

OFFICIAL GUIDE TO ROYAL BOTANIC GARDENS.

OFFICIAL GUIDE TO ROYAL BOTANIC GARDENS, PERADENIYA.
 BY MR. MACMILLAN. PUBLISHED BY THE
 GOVERNMENT OF Ceylon, 1913.

TO those who are not likely to have an opportunity of visiting "The Garden of Eden," as Peradeniya has been called, the handbook compiled by Mr. Macmillan will prove a valuable addition to their botanical and topographical knowledge of the



MAIN ENTRANCE, PERADENIYA GARDENS

tropics. The 150 acres occupied by the gardens being situated about 1,600 feet above sea level, with a mean annual temperature



ROYAL PALM CIRCLE, PERADENIYA, 1898.

of 76 deg. F., are in a position where vegetation has every opportunity of development.

Having been curator of the gardens since 1895, Mr. Macmillan on his appointment to the post of director in 1913 had accumulated a store of information on the subject, which has given him special facilities for the task so successfully accomplished in this guide book.

The history of the gardens during their century of existence is succinctly told, from their transfer to their present location in 1821 to their subsequent extensions and the opening of branch gardens at Badulla and Anuradhapura.

The reader is first conducted through the stately row of *Amherstia nobilis* trees imported from Burma in 1860, situated near the main entrance, a view of which has been reproduced through the courtesy of the publishers. Next in order comes the "Palm Circle Drive," followed by the trailing plant *Aristolochia Pergola* and leading to the "Octagon Conservatory" with its store of indigenous and imported flora. The "Orchid House" forms the next feature of attraction, and is followed by the *Ficus elastica* or India rubber tree with its fantastically shaped roots covering the ground. The "Travelers' Tree" and Papaw trees continue the story till the "Avenue of Royal Palm" (*Oreodoxa regia*) is reached, which is shown in the accompanying illustration.

Each of the 58 artistic illustrations has its own history, which would repay perusal by any one interested in the picturesque development of natural scenic beauties.

THE WATERPROOFING OF FABRICS. BY DR. S. MIERZINSKI.

Translated from the German by Arthur Morris and Herbert Robson, B.Sc. 1914, second edition; first edition, 1903. London: Scott, Greenwood & Son. [Octavo, 128 pages, 29 illustrations. Price, 5s.]

THIS is an attractive title to the rubber man, but it will probably prove rather disappointing reading. The first noticeable feature of the book is that the author does not seem to consider rubber as a waterproofing material or describe any of the work which has made the name Macintosh famous. In fact, Macintosh is not mentioned except in the chapter on British patents, and there quite disparagingly.

What the author seems to regard as the only proper waterproofing is the impregnation of cloth with a metallic oxide, a soap or a tar, to render it rain tight, though it is explained that all these fabrics will eventually leak.

There is a chapter on the preliminary treatment of fabric by washing with soda lye, drying, etc., which shows the way fabrics are treated. One chapter entitled "Waterproofing With Acetate of Alumina" describes a method of soaking the fabric in acetate of alumina and drying down to form a basic acetate which is not quite waterproof. This is followed by a chapter on drying, where the process of after treatment with soap to form an alumina soap is described as a process of absolutely waterproofing fabrics. Here the author states that it is customary to put rubber in the soap. "This is easily done," he says, "as the soap solution has the property of forming emulsions with solutions of india-rubber. . . . The emulsion can only be separated by the action of acids or direct steam."

A process of waterproofing with paraffine is described, which is merely frictioning it on with calenders. A number of other methods of waterproofing are given and the manufacture of tarpaulin and tarred fabrics is fully described. It appears that the use of calenders for frictioning on tar in the same way that rubber is put on fabrics would be a great step forward, as the apparatus described as now being used looks rather crude, though some features of it approach the calender quite closely. Probably those who are putting rubber solutions on cloth would receive a number of hints, particularly in the line of handling the cloth both in preliminary treatment and in final calendering and drying, as much of the work is devoted to this subject.

There is a final chapter by the translators describing British patents on waterproofing, in which they say, "It may be taken for granted that if a process is worth anything it is patented in England"; which is a complacent British way of looking at things. The translators, however, seem to know more than the author, as they comment intelligently on some of his more obvious lapses.

The list of patents will be valuable to anyone involved in patent litigation on waterproofing.

MOLDED ELECTRICAL INSULATION AND PLASTICS. BY EMILE Hemming. 1914. Ward, Clausen & Co., 200 Fifth avenue, New York. [Octavo, illustrated, 208 pages.]

HERF is a volume which contains much practical information of considerable interest for the rubber manufacturer. It deals with plastics for a special purpose, the method of manufacture differing considerably from that used in working the usual rubber articles; but perhaps these methods might be applied to rubber for quite a few purposes.

A glance at its contents shows that a large number of substances are now made into molded insulators containing no rubber, for formerly rubber was used to a much greater extent than today. In view of the cheapening of the raw material, allowing cheaper products to be made now, it is perhaps worth while for the rubber manufacturer to ask himself if he cannot get back some of the business lost on account of the high prices he was formerly compelled to charge.

In the introduction the author says, "A few years ago the choice of insulating materials lay practically between porcelain, hard rubber and the so-called shellac compounds, but today a considerable number of substances of widely differing properties and constitution are offered on the market."

"Molded insulation" is defined as a plastic mass composed fundamentally of a binder and a filler and formed in molds or dies, usually under pressure. The materials entering into them are referred to as "composition." The author says, "Ten years ago porcelain was most widely used as an insulator, but hard rubber with fillers such as asbestos, called 'vulcanized asbestos materials,' were largely used and were excellent in every respect except price and the inability of rubber to stand high temperatures."

This author divides molded insulation into nine classes, as follows: Class A, organic hot molded materials; Class B, organic cold molded materials; Class C, inorganic cold molded materials; Class D, ceramics; Class E, rubber compounds; Class F, organic plastics; Class G, synthetic resinous products; Class H, hardened fiber materials, and Class I, molded mica.

Class A comprises all the sealing wax compounds and Class B those in which a solvent is used. It would appear that rubber might enter into the first when heated to a plastic condition and rubber cement into the second or Class B. Class C is of the Portland cement type and is of no interest to the rubber man as a possible manufacture. The same is true of the ceramics of Class D.

Of Class E the author says, "Among the various materials employed in the manufacture of molded insulation, rubber is the only product which in itself, without intermixture of a filling or strengthening medium, presents all the desirable qualities of an insulator, combined with the necessary mechanical strength and other requisite physical properties."

Class F includes celluloid, casein and other plastics than rubber.

Class G includes the phenol, formaldehyde and similar condensation products such as bakelite, condensite, etc.

Vulcanized fiber, which is called Class H, is vulcanized by chloride of zinc, etc., or it may be treated with resinous binders. Mica, which is given in Class I, must also be mixed with resinous binders to be used as a plastic.

A long chapter is devoted to raw materials, the rubber manu-

facturer being familiar with most of these as fillers, though many substances are largely used in the insulators that are little used in the rubber trade.

A good description of the necessary properties of molded insulation is given under the heads of "Life," "Molding," "Puncture Test" (dielectric strength), "Mechanical Strength," "Weather-proof Qualities," "Heat Proof Qualities," "Resistance to Chemical Action," "Machining of Molded Pieces" and "Color and Appearance." Molds and dies are treated of at length. The selection of materials is also discussed and a large number of illustrations are given which are valuable as showing the forms of molded insulators now in demand. It is to be observed that many forms have metals, including brass and copper, molded into them.

The work concludes with about fifteen pages of results of electrical and mechanical tests on various specimens of different kinds.

Any manufacturer of molded goods, whether for insulation or otherwise, will certainly receive enough hints to repay him for a perusal of the work, and even the description of working other plastics is instructive.

Throughout the book are the recurring statements as to the desirability of rubber for this work and the lament about high prices. The latter objection is rapidly disappearing, and perhaps the rubber industry can now re-enter some of this lost field.

ANNUAL REPORT OF THE SECRETARY OF COMMERCE.

It will be recalled that by the transfer in August, 1912, of various bureaus from the Department of Commerce and Labor to the newly created Department of Labor, the more strictly commercial sections were left in the hands of the former; its name being changed to the Department of Commerce. As now constituted, it includes nine bureaus and the office of the Secretary, with five divisions, the bureaus being respectively those of Foreign and Domestic Commerce, Corporations, Standards, Census, Fisheries, Lighthouses, Coast and Geodetic Survey, Steamboat Inspection Service and Navigation.

Manufacturers will be very much interested in the first annual report of Secretary William C. Redfield, and particularly in that part of his report that covers the bureaus of Foreign and Domestic Commerce, Corporations, Standards and the Census. The publication known as "The Daily Consular and Trade Reports," published by the Bureau of Foreign and Domestic Commerce, has proved exceedingly popular, the demand being considerably in excess of the edition so far printed.

Under the head of publicity work are also mentioned the semi-weekly press letters of statistical information; the "Monthly Summary of Commerce and Finance"; as well as various quarterly statistical Statements, and the annual volume of "Commercial Relations of the United States." With regard to the Division of Statistics, it is urged that its work should receive much more attention and support than it now gets from Congress.

A perusal of this comprehensive report gives a good idea of the work achieved and contemplated by the department in its re-organized form, for the benefit of American commerce.

The report of the proceedings of the Agricultural Society of Trinidad and Tobago shows the total exports of rubber from those islands for the first six months of the year to have amounted to 3,785 pounds, as against 1,505 and 2,076 pounds in the same periods of 1912 and 1913.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

NEW TRADE PUBLICATIONS.

ANOTHER HANDSOME RUBBER GIRL.

PEOPLE in the rubber trade with artistic appreciation will recall the handsome young women (as reproduced by lithography) that have emanated from the Pennsylvania Rubber Co., of Jeannette, Pennsylvania. Two years ago "Miss Jeannette" made her debut, and last year it was "Vecelia"—and now comes "Euphemia," being a life size presentation, head and shoulder view, of a very handsome blondish young woman with pink cheeks and dark brown eyes, and hair to match, and wearing exactly the sort of hat that such a young woman would be likely to wear in the summer season. The full size of the panel is 34x20 inches. The size of the lithograph print is 20x17 inches, and the painting is reproduced in ten or a dozen colors. The name of the lithographers is not vouchsafed, but they have done their work in this instance exceedingly well.



The name "Euphemia" was selected for this attractive young person both because it seems to fit her, and in the opinion of the company it also fits their goods admirably, for it is derived from two Greek words, *eu* meaning "well," and *phama* meaning "voice" or "word," and being interpreted may be said to mean "well spoken of."

Under the picture is a line "Pennsylvania Oilproof Vacuum Cup Tires," and the name and address of the company.

It is a fine piece of advertising and is likely to cause much dissension in all offices receiving only one copy.

DAVID BRIDGE & CO.'S NEW CATALOG.

With a view to keeping their friends abreast of their latest improvements, David Bridge & Co., of Castleton, Manchester, England, have just brought out a catalog entitled "Section K3. Bridge's Rubber Machinery for Plantation and Wild Rubbers," which is intended to supplement that of "Section K2," published in 1911. To those not fully acquainted with the products of this firm, this catalog will prove of special interest, containing, as it does, upward of 70 illustrations referring to 27 classes of machinery and appliances for the preparation of plantation and wild rubbers. Six types of macerating and creping machines, and one with name of estate engraved on back roller, are first illustrated, followed by hand and power-driven roller machines.

Next in order comes the "Universal Patent Scrap Rubber Washing Machine," with its various driving arrangements, after which are shown vacuum drying and surface smoking plants, including the "Dacostidge" combination. Rubber blocking presses follow, as well as a number of engines, boilers and other mechanical adjuncts. Prominence is then given to the Da Costa "Rapid" smoking coagulator, as well as the Wickham "Hard Cure" process, of the machinery for which Messrs. Bridge are the sole makers. Other features of the catalog are laboratory

vulcanizing plants, as furnished the Department of Agriculture, Federated Malay States, as well as experimental appliances supplied to the Technical College at Delft (Holland), and to the London Imperial Institute.

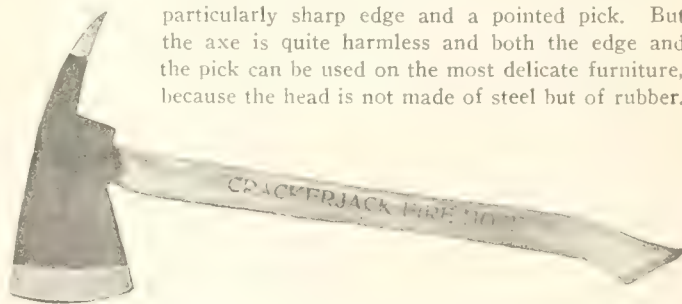
Standard machinery for rubber manufacturers is referred to, though space forbids its complete enumeration, but illustrations of leading types call attention to that feature of the Bridge production. Various special machines for plantation purposes are likewise shown.

A FIREMAN'S AXE OF RUBBER.

The American Rubber Manufacturing Co., of San Francisco, have recently issued a handsome catalog with stiff paper covers containing 126 pages, describing and illustrating the various types of hose which they manufacture and also the great variety of accessories which they carry, including: Hose couplings and nozzles; gaskets; firemen's landing pads; axes and other firemen's implements; gongs; ladders; firemen's clothing, caps and badges, and a variety of extinguishers. In describing their fire hose they call attention to the fact that good hose is the main essential in any fire service, as the bursting of a single section may not only mean the destruction of an immense amount of property, but of human life itself. They state that it is the manufacturer's duty to produce "a water-conducting hose which will be light, pliable, compact, free from friction, kinking or twisting, and at the same time strong and flexible." They add that in their manufacture of fire hose all these requirements are fulfilled.

The last few pages of the book are given over to a series of tables that will be found valuable to those interested in fire departments. These tables cover the amount of hydrant pressure required to send a stream to a certain height or distance with nozzles of various dimensions. They also give the discharge of water in cubic inches through nozzles of various sizes. Other tables give the capacity of cylindrical tanks and systems. Much other information is contained in these tabulations.

Accompanying the catalogue is a fireman's axe, a foot in length and having a head that looks like steel with a particularly sharp edge and a pointed pick. But the axe is quite harmless and both the edge and the pick can be used on the most delicate furniture, because the head is not made of steel but of rubber.



This is an advertising device which the fireman will appreciate—and his young son appreciate even more.

CATALOGS OF THE HAZARD MANUFACTURING CO.

A complete set of catalogs to hand from the Hazard Manufacturing Co., of Wilkes-Barre, Pennsylvania, covers the varied product of that concern. Its rubber-covered wires and cables represent the experience gained during twenty-five years of successful manufacture. The materials used, it is claimed, remain in service thoroughly water and weather-proof, while the slow-burning weather-resisting wires are internally saturated with a fireproof compound.

Quotations and price lists of the various forms of insulated wire form a special catalogue, with a large number of artistic engravings of buildings and locations where the "Hazard" wires are used. These include the "Calumet & Hecla" mines at Calumet, Michigan; the "United Verde" copper mine at Jerome, Arizona; Marie Antoinette Hotel, New York; Pennsylvania Trust Building, Philadelphia; a group of United States warships, and various

other scenes illustrating the subject of "Hazard" insulated wires.

The various appliances required for their installation and operation are shown in detail, the set of a dozen catalogs and price lists being a valuable addition to the reference libraries of those interested in the subjects dealt with.

The Firestone Tire & Rubber Co., of Akron, is distributing a small booklet which has as its object the introduction and sale of cycle tires, the production of which was started by this company only a few months ago. The tires are made with non-skid and corrugated treads, and tubes may be had in either red or gray. The booklet also calls attention to repair materials and gives addresses of 79 domestic and 29 foreign branches, agencies and service stations maintained by the company.

The Superior Type Co., of Chicago, manufacturers of supplies of every nature for rubber stamp manufacturers, have just issued a 33-page illustrated treatise on "Rubber Stamp Making." The purpose of this book is not only to enlighten the beginner but also to assist those who though experienced are not obtaining the best results, and primary instructions are given, which include: Descriptions of the required equipment, with illustrations of molding press, vulcanizers, motor driven power saw and power drill with self-centering table; details of the necessary materials—stamp rubber, sponge rubber, rubber dam, rubber cement, compounds, etc.; instructions in setting up the type form so as to avoid waste of rubber; equipment for and manner of making molds; mold trimming and drying; vulcanizing, and mounting. The book concludes with a word of friendly advice to the manufacturer to "Make the very best goods possible and then have backbone enough to ask a fair price from the buying public." It is an interesting book and will doubtless prove of value to stamp manufacturers generally.

The title "How to Get More Mileage out of Your Tires" has been given to a catalog recently distributed in the interest of Diamond Rubber Goods, manufactured at Akron, Ohio. This catalog is divided into three sections, the first of which is devoted to types of tires and styles of treads, also to tubes and accessories. The second section describes the making of the various styles of tires and the injuries to which a tire is liable in use; while the third section gives instruction in repairs and the necessary care to enable the buyer to "get the mileage he pays for from the tire he buys."

The July calendar issued by W. G. Brown & Co., of Cincinnati, dealers in crude and reclaimed rubber, has as its decorative feature another of the outing scenes so popular and appropriate at this season. This particular picture shows the sportsman making "flap-jacks" over a camp fire, the materials for which the guide, who stands in the background with axe in hand, has evidently supplied through strenuous effort.

Holmes Brothers, makers of rubber molds and special machinery, Chicago, are distributing acceptable advertising matter in the form of a blotter. This blotter, in addition to containing a calendar for the month and setting forth the address and the business of the firm, shows in colors a harvest scene in Hertfordshire.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE "DUPLEX" COLLAPSIBLE CORE.

A NEW type of collapsible tire core has been developed and placed on the market by the Birmingham Iron Foundry. The core is being made at the company's branch factory at Akron, Ohio.

Fig. 1 in the accompanying illustrations shows the core with all of its component parts, and Fig. 2 shows a section of the core and the method of using the pinch-bar, which is the only tool necessary, for assembling and taking the core apart. The outfit consists of a cast-iron core of the usual design, with an internal

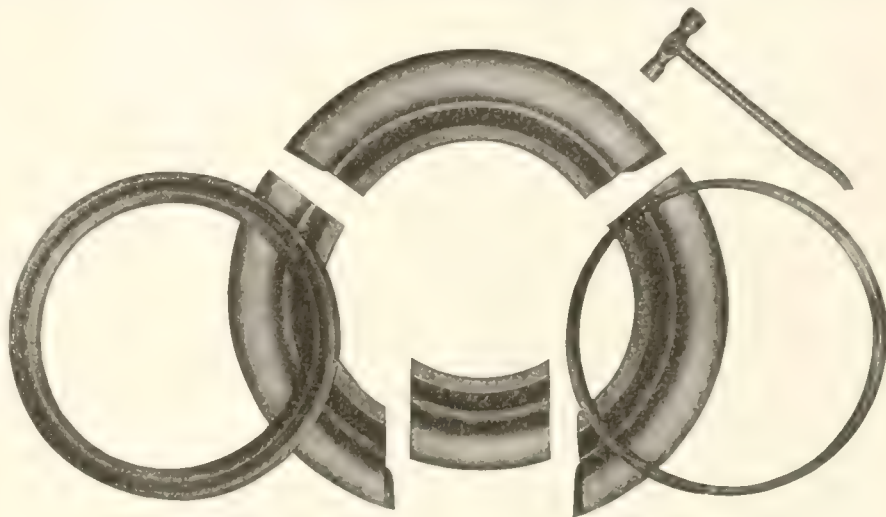


FIG. 1.—BIRMINGHAM "DUPLEX" COLLAPSIBLE CORE.

projecting flange. In the upper face of this flange is an annular groove, the inner wall of which is slightly undercut. For retaining the core sections in position, a splitspring or expansion ring is employed. The inner edge of this ring is cut at an angle corresponding with the inner face of the groove, and the outer edge is slightly tapered. Over this expansion ring is placed a locking ring, which fits in the groove between the core flange and the expansion ring.



FIG. 2 SECTION OF THE "DUPLEX" CORE.

To assemble the core, the sections are placed together on a table and the locking rings placed in position. The upper ring is tapped lightly with the hammer end of the tool, forcing the locking ring into the groove and drawing the sections securely together. To take the core apart, all that is necessary is to insert the pinch-bar between the locking ring and the core flange, to pry the ring from the groove.

THE BRISTOL COMPANY HAS A BOSTON BRANCH.

The Bristol Co., of Waterbury, Connecticut, has opened a branch office in the Old South Building, Boston, in charge of Mr. F. H. Emerson, one of its sales engineers. This year, by the way, completes the first quarter century for this company, and its growth has been so rapid that its floor space has doubled every five years. Its success has been particularly marked since Mr. William H. Bristol, the president of the company, took over its management, some six years ago. Over 65,000 Bristol recorders have been sold—which is certainly a notable record.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE STATE OF THE TRADE

THE rubber trade generally is decidedly quiet, following the slackness in the great engineering and cotton industries of the north of England. A lively demand—or the reverse—for mechanical goods has come to be recognized as the index of good or indifferent trade, other branches of the manufacture depending more upon special circumstances, among which the prevailing weather takes rather a prominent position. Motor tires, both for pleasure and commercial vehicles, continue in good demand, but owing to increased competition from home and abroad individual profits in the majority of cases show a considerable reduction, a position of affairs which seems likely to become even more acute.

The state of trade is of course against the raw rubber interests, manufacturers preferring to buy only for their immediate requirements. This policy seems pretty general, and though there is no organized arrangement to depress prices it is recognized generally in the trade that the policy of buying from hand to mouth tends to keep prices down; and it is confidently anticipated that the next month or two will see a further depression. No immediate remedy from the rubber growers' point of view seems likely, as it will take some time for the rubber lawn tennis court to establish itself in popular favor.

I am told that the court at the Rubber Exhibition cost £500 to make, and I have also been assured by others that they would be glad to make one at half that price. Presumably the usual state of affairs will result if such courts come into demand, i. e., prices will be cut and the substitute court become rampant, to the general discredit of the rubber court.

To revert to raw rubber for a moment, there is undoubtedly a good deal in Mr. Herbert Wright's contention that planters are acting more in the manufacturers' interest than their own in giving full publicity to their costs of production, forward sales, etc. Mr. Wright's refusal, as chairman, to give details of his companies has met with strong criticism and may not prove of benefit, but there seems little doubt that manufacturers are apt to frame their buying policy to some considerable extent upon the facts and figures specifically mentioned, as also upon others which regularly see the light of day in regard to rubber plantations but are usually hidden under a veil in the case of other commercial concerns.

PRICE OF MOTOR PNEUMATIC TIRES.

Motor car owners are at the present time much exercised in mind with regard to their purchases of tires, as the prices of different firms for what is apparently the same article show considerable variation. In a general way, what I may call the leading group of six or seven makers offer their tires at the same price. Other makers outside this group show considerable difference of price, in both directions. Taking the most common size, 815 mm. x 105 mm. (32" x 4"), as used on 15 H. P. cars, the purchaser has quite a bewildering choice, from the £5 18s. Russian Prowodnik tire to the new Moseley plantation rubber tire at £3 18s. less a special discount of 10 per cent. during July. Then Harrod's Stores, of London, are offering their Shell tire, which is moderately priced, while the Avon Rubber Co. are asking £4 18s. for their 815 mm. x 105 mm. (32" x 4") extra heavy, their ordinary type remaining 15s. higher than Moseleys'. Henley's Telegraph Works, which are newcomers into this field, have a rather high-priced tire. I might go on enumerating different makes but I merely wished to make a brief reference to the existing situation. As all the manufacturers give a guarantee of 3,000 to 4,000 miles, motorists are

engaged in finding out for themselves if the higher-priced tires are really more economical in the end than those purchasable at a much lower figure, as for instance the Atlas Vanadium puncture proof tire, which is priced at £8, the same figure at which the Prowodnik tire was formerly sold.

MR. W. J. EYRE.

I regret to have to record the death of this gentleman, in his 74th year; and a word or two about his career may be of interest. From early life he was associated with the African rubber trade in Liverpool, and about twenty years ago he conceived the idea of washing dirty rubbers for the trade, thus being a precursor of the Crude Rubber Washing Co. His business premises were near Holywell in North Wales, the site and buildings of a defunct copper works being utilized. A large overshot waterwheel formed the source of power for the washing machines, which at the time of my last visit to the works were being largely augmented. Unlike concerns whose procedure has been to buy rubber outright, wash it and then have to face a falling market on selling, Mr. Eyre's method was to bargain with a customer to take the washed rubber at a price before completing his own purchase. No rubber was of too low a grade or too high a smell for Mr. Eyre to tackle, a certain strong but harmless disinfectant playing a prominent part in the treatment. Mr. Eyre leaves a son who was associated with him in the business.

RECLAIMED RUBBER.

The impending doom which, according to Mr. McLaren's statements of some months ago, threatened the reclaiming industry, shows no signs yet of materializing. No works have yet been closed down. On the contrary, rubber scrap dealers and reclaimers I have met speak with confidence as to their prospects. Individual reclaimers of course may express the opinion that there are too many in the business, and the competition among selling agents is certainly keen enough, for the number of buyers is very limited. Further competition, I hear, is imminent, as a large American concern hitherto unrepresented in Great Britain has recently established an agency. The works of the Xylos Rubber Co., Limited, at Trafford Park, Manchester, are rapidly approaching completion. These works, as mentioned on a former occasion, are promoted by the Firestone Tire & Rubber Co., of Akron, Ohio, and will operate a patent granted in 1912. It is a modification of the alkali process, the novelty being the use of a small quantity of aniline or other amino compound which acts as a catalytic agent, bringing about the union of both the free and combined sulphur with the caustic alkali. Samples of the product which I have seen are of very high quality.

PAVEA RUBBER.

The general interest in this topic is well sustained, all the more since the appearance in "Truth" of articles under the headings of "The Tipperary Rubber Boom" and "The Synthetic Enigma." Owing to the widespread interest and the attempts which have been made to obtain information surreptitiously, sentries have been posted round the Handforth works night and day. With regard to the offers or challenges which have been made to Mr. Roberts by "Truth," your London contemporary and others, that the complete process should be demonstrated before experts sent by the said challengers, rubber manufacturers say that they see no reason why Mr. Roberts should thus oblige those with whose interests he may come into conflict. It must be remembered that those who made synthetic rubber by

laboratory processes patented each step as they progressed, whereas it is understood that the Pavea rubber is to be produced by a secret unpatented process. Secret processes are continually being evolved in factories of one sort or another, and those associated with them are not commonly called upon to stand and deliver.

I hold no brief for Pavea rubber but am merely trying to put forward a common sense view of the situation which has arisen and which has given rise to considerable comment. A manufacturer who has had the Pavea rubber closely examined in his laboratory states that it differs from Pará rubber in the absence of insoluble matter and in the constitution of the resin. Pavea rubber, despite the fitting up of large works for its production, is not yet upon the market, so it is too soon to see what the plantation producers will do to meet the new competition. I hear, however, that if it is a success the Highlands & Lowlands Co. are prepared to sell their produce at a figure as low as 1s. 3d. per lb. A fairly large sample of Pavea rubber has attracted a good deal of attention at the Rubber Exhibition, where it was shown by F. R. Muller & Co., the sole selling agents, and it need hardly be said that it has proved a very general topic of discussion.

ENGLISH COMPANIES RECENTLY REGISTERED.

Baker Rim Co., Ltd., 59 Hagley Road, Stourbridge. Capital, £25,000—15,000 "A" and 10,000 "B" shares of £1 each. To acquire inventions belonging to F. W. Baker relating to motor car rims. First directors F. W. Baker, A. Round, E. S. G. Hicks and C. A. Mills.

Fabricless Rubber Products, Ltd., 8 Laurence Pountney Hill, E. C. Capital, £100,000. To acquire the business of the Azulay Syndicate, Ltd. First directors F. R. Hill, F. C. Roles, W. B. Wright and Sir W. H. Porter.

Sewn Rubbers, Ltd., 59 Chiswell street, E. C. Capital, £2,000 in £1 shares. To manufacture and deal in all kinds of motor and other tires. First directors A. T. Collier and F. M. Beck.

Weber Rubber, Ltd. Capital, £1,000 in £1 shares.

BRITISH GROWN RUBBER.

In addressing the Sussex Road (London) Commercial Institute on a recent occasion, Mr. Herbert Wright said that Great Britain should take the lead in technical rubber instruction. British possessions alone contained more than half the total planted acreages under rubber, the balance being largely controlled by companies registered in England. British possessions alone would soon give rubber at 2s. 6d. (60 cents) per pound, valued at £28,000,000 sterling (£140,000,000) per annum. The crop would be ultimately greater than the combined crops from tropical America, Mexico and Africa. He had no doubt that increased supplies of rubber would create improved demand for that product.

THE BYRNE CURING PROCESS.

Mr. F. A. Byrne, director of the Rubber Curing Patents Syndicate, Limited (who has lately been visiting the East), has stated in an interview that the new method obviates the expenses of the installation and upkeep of washing and crêping machines. It has been adopted by a large additional number of estates in the Malayan peninsula and Java, while Ceylon planters have been awaiting Mr. Byrne's personal explanations before taking up the new process on an extended scale.

In his opinion an improvement in the quality of plantation rubber is needed, with the view of securing the large market which awaits it for tires when it is brought up to the standard of fine, hard Pará. Some of the large makers are said to be using plantation rubber for their covers, but not for their inner tubes.

ENGLISH CABLE CONSTRUCTION COMPANIES.

The old adage, "It's an ill wind that blows nobody good," is being exemplified in the case of the English cable construction companies, which have in most cases been enabled through the fall in rubber, to pay increased dividends, while carrying over larger balances than a year ago to new account.

A comparison of the dividends paid for the two years by eight companies gives the following results:

	Ordinary dividend,	
	1912-13.	1913-14.
Anchor Cable	15	15
British Insulated & Helsby Cables.....	10	13
Ericson Manufacturing	8	8
Callenders Cable & Construction.....	15	15
Craigpark Electric Cable.....	5	6
W. T. Glover & Co.....	7½	7½
W. T. Henley Co.....	15	20
Telegraph Construction & Maintenance....	20	20

An increase of about \$400,000 is represented by the amounts carried forward to new account by the above eight companies for 1913-14, as compared with 1912-13.

Cheap rubber is a boon to the cable manufacturing industry, however badly it may hit investors in plantation shares.

ENGLISH CONSUMPTION.

Of the 31,000 tons of rubber imported by England in the five months ending with May, 1914, no less than 24,000 tons were re-exported, leaving only 7,000 tons for home consumption, or little more than half the amount for the corresponding time last year. English manufacturers were thus apparently prepared to let their stocks become depleted, while the foreigner took as much cheap rubber as he liked.

GERMAN MANUFACTURING STATISTICS.

The eighth annual census of German manufacturers shows the total earnings of the nine principal tire manufacturing concerns operating in that country to have amounted in the past eight years to \$16,332,288—a yearly average of \$2,041,536—on a capital investment of \$10,675,000. Of this amount the Continental company (the largest of the nine companies) realized earnings amounting to \$9,904,285—a yearly average of \$1,238,036—on a capital of \$3,750,000, representing an average yearly dividend of 42.5 per cent., the largest average for any of the companies; while five of these nine largest concerns have lost in the eight-year period a total of \$2,011,719.

Statistics also show that on January 1 of this year there were in the German Empire 70,515 motor vehicles—an increase of 59,443 over the number recorded when the first census was taken in January, 1907—also 22,457 motorcycles.

TURKEY'S COMMERCE IN RUBBER.

Statistics covering the commerce of Turkey show the imports of rubber and gutta percha goods during the year 1911-12 to have amounted to \$954,521, divided between: Rubber overshoes, \$454,349; raincoats, \$138,421, and all other rubber goods, \$361,751. Of these imports the United Empire supplied rubber goods to the value of \$479,656, Austria Hungary \$261,109 and the United States \$192,179. The quality of the rubber goods received from the United States is said to have been unsatisfactory to the Turkish trade, but there seems to be no reason why American goods might not regain favor in that country if the quality is improved.

Turkey's exports of rubber and gutta percha goods in the year 1911-12 were valued at \$59,403, and the exports of old rubber to the United States amounted in 1912 to \$64,790, in the year 1913 to \$51,769.

RUBBER NOTES FROM JAPAN.

By Our Regular Correspondent.

THE LONDON EXHIBITION.

JAPAN contributed two exhibits of rubber goods to the London Exhibition, which were respectively from the Rato Co., of Asakusa, Tokio, and the Nakajima Co., of Honjo, Tokio. The special feature of the former was the "Shield" (or protective) tire, by which friction is avoided, while the latter mainly consisted of plain and printed rubberized silk (Habutae). It included a "Patent Life-Preserver of Rubber Fabric," as well as air pillows and other articles which the company is in a position to manufacture on a large scale.

NEW JAPANESE RUBBER COMPANIES.

The present year has witnessed the establishment of several new Japanese rubber companies. Among the most prominent is the Kyokuto Rubber Co., incorporated April, 1914, with an authorized capital of \$75,000, one-fourth of which has been paid up. Its products are bicycle and solid tires, water-pillows, etc. After the removal of the Watanabe Works, its premises were purchased by the newly established Fukagawa Rubber Works, of Tokio. Rubber heels and gas tubing form the principal manufactures of this last-named company.

Since last autumn the Nihon Rubber Works has been arranging to extend its line beyond medical specialties, so as to include tires, toy balloons and rubber cement. Last spring the Kobe Rubber Co. sold out to its selling agents, its products being bicycle tires, tubings and other rubber goods. The staff now includes U. Inokuchi, a chemical manufacturer, as consulting chemist. In May last, the Ebisa Rubber Co. was established at Tokio for the manufacture of waterproof fabrics. This company's Osaka works, which have been making rubber hand balls, now contemplate the addition of bicycle tires.

RUBBER EXHIBITS AT THE "TAISHO" EXHIBITION.

The "Taisho" exhibition opened at Uyeno Park, Tokio, in the spring of this year represents a capital of \$800,000, being intended to promote the development of Japanese commerce and industry, in connection with the Imperial accession ceremonies. With a total area of 82 acres, and with buildings covering 468,000



THE MUSEUM BUILDING.

square feet, the 200,000 exhibitors have an excellent opportunity for the display of their products, while the fourteen divisions include a full representation of modern arts and industries. Special structures are devoted to Industry, Transport, Fine Arts, Forestry, Corea, Saghalien, Formosa, South Seas and other subjects. The president is His Imperial Highness Prince Kanin, and the director-in-chief is the Governor of the Prefecture of Tokio.

The rubber exhibits are broadly divided into those respectively affecting production and consumption, the former being grouped in the "South Sea" building, by which generic name the Chinese

and Japanese call Siam, the Malay Peninsula, Java, Borneo, Celebes, Sumatra, etc. In 17 large photographs are to be seen the processes of making plantation rubber, while the exhibits include many grades of crude rubber, tapping knives and cups, rubber plantation tools and other appliances.

Exhibits of rubber manufactures are displayed in various of the special buildings, a prominent position being occupied by



THE INDUSTRY BUILDING.

the Dunlop Rubber Co. (Far East), Limited, of Wakinohama, Kobe. This company (a branch of the English one) claims to be making the best tires in Japan, and to be filling a large part of the demand. Its exhibit includes automobile tires and tubes, solid tires, bicycle tires, suction hose, packings, rubber heels, etc.

Jinrikishas with pneumatic tires are shown by about a dozen Tokio makers, while a large number of exhibitors display motor cars and bicycles constructed in Japan.

Among various other exhibits of rubber manufacture are the following:

Meiji Rubber Works, Tokio.—Electric workers' gloves, rubber rolls for paper mills, rubber hose, ebonite.

Nihon Kautchuk Works, Tokio.—Spraying hose and repairing compounds.

Ida Rubber Co., Tokio.—Tubing and hose.

Nipon Rubber Co., Ltd., Tokio.—Tires for military automobile transport.

Mitatsuchi Rubber Manufacturing Co., Tokio.—Ebonite bars, tubes, plates and insulating materials.

A large variety of rubber goods and druggists' specialties is displayed by other leading Japanese exhibitors, some two dozen or more in number.

In the "Foreign Building" the Japanese agents of various leading European automobile makers have specimens of their cars, the tires being of Goodrich, Firestone, Continental, Michelin and other makes.

THE GOODRICH EXHIBIT.

The B. F. Goodrich Co. is the largest rubber goods exhibitor, occupying a space of nearly 7,200 square feet, its lines forming an interesting display for the rubber trade of the world. Included in the exhibit are all varieties of tires, repair outfits, hose of various kinds, packings and a large assortment of sundries, the total number of items being about 80.

This comprehensive exhibit is a striking example of what such an enterprising firm can do to bring its products before the attention of foreign buyers in the face of such keen competition as exists apparently in the Japanese market.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE BATAVIA RUBBER EXHIBITION.

PRIZES AND DISTINCTIONS TO BE AWARDED

IN addition to certificates of honorable mention, the following special prizes will be awarded at the above exhibition, which opens on September 8:

I. Prize. Most complete description of housing and hygienic regulations for coolies on rubber estates. By Governor General of Netherlands Indies.

II. Batavia 1914 Cup—Value equaling \$200 gold. For best collection showing cultivation of *Hevea Brasiliensis*. By daily administration.

III. Soerabaya Handelsblad Cup—Value equaling \$180 gold. For exhibit from Netherlands Indies, connected with cultivation of *Hevea Brasiliensis*. By M. van Geuns, chief editor.

IV. Van Laer Cup—Value equaling \$120 gold. For best commercial sample of Malayan *Hevea* rubber. By A. van Laer.

V. The Lowest-Cost-of-Production Cup—Value equaling \$144 gold. For lowest cost of production on a Java estate, f. o. b. Tandjong, Priok. By F. Peck & Co., Bandoeng.

VI. The Ottolander Cup—Value equaling \$200 gold. For best sample of commercial Ceara rubber. By T. Ottolander, president of the Netherlands Indies Agricultural Syndicate, Banjoewangi.

VII. F. M. S. Trophy—Value equaling \$96 gold. For best sample of commercial *Hevea* rubber produced upon any estate in the Netherlands Indies. By Grenier's Rubber News, Kuala Lumpur.

VIII. The Ceylon Cup—Value equaling \$96 gold. For commercial sample of Smoked Plantation Rubber, produced in Ceylon, approaching as near as possible to Fine Hard Pará. By N. C. S. Bosanquet.

IX. Gold medal. For the most complete exhibit of machinery used on rubber estates. By the West Java Rubber Planters' Association.

X. Planters' Association of Malaya Cup—Value equaling \$240 gold. For every exhibit of plantation Pará (in lots of not less than 100 pounds) which attains the highest standard on basis of proposed R. G. A. tests. By Planters' Association of Malaya, Kuala Lumpur.

XI, XII and XIII. Gold, silver and bronze medals. For three best commercial samples of Smoked Sheet. By Rubber Growers' Association, London.

XIV. THE INDIA RUBBER WORLD Cup. For most complete exhibit of wild rubber. By Henry C. Pearson, editor.

CONGRESS OF RUBBER COUNTRY PHYSICIANS AT BATAVIA.

During the rubber congress to be held at Batavia, Java, from September 7 to September 12, there will also be held a congress of physicians from rubber countries. About fifty doctors have already expressed their intention of taking part in this congress, which is being organized by Dr. Kiewiet de Jonge.

PARTICIPANTS IN THE JAVA EXHIBITION.

According to latest reports, the countries taking part in the exhibition will include: England, Holland, Malay States, British India, Ceylon, Straits Settlements, Siam, Australia, Belgium, Germany and Italy. Replies had not at that time been received from Japan, Sweden, Denmark and Austria.

BATAVIA PLANTATION INVESTMENTS, LIMITED.

At the recent second annual general meeting of the above company, a final dividend of 7½ per cent. was declared; making a total of 15 per cent. for the year. This corporation, with a capital equaling \$1,000,000 (nine-tenths of which is fully paid up), has apparently been making satisfactory profits on its investments in the shares of various Dutch East Indian companies, without incurring new liabilities, and meeting all current expenses out of revenue. The three estates controlled are the "Kweeklust" and "Weltevreden" of Java, and the "Eerste Medansche" of Sumatra, to which it is contemplated to add others. The total output of the three was about 300,000 pounds, produced at a reduced cost of 1s. (24.33 cents) per pound.

A fourth estate has recently been added to the company's holdings, the "Broadwater," Perak (Federated Malay States),

of 1,000 acres, of which 370 acres have been planted since 1910. Some 3,000 trees are said to be now fit for tapping.

In explanation of the relatively favorable prices obtained last year, the chairman stated that the company sold its product in the East, thereby saving the freight to London and the charges at that port, adding:

"There is an increasing number of American buyers, who prefer to purchase their rubber direct from the estates in the East and to ship it to New York, rather than buy in London. . . . The percentage of the output of rubber sold in London is steadily decreasing and . . . will decrease still further."

RUBBER IN GERMAN EAST AFRICA

The British Consul at Dar-es-Salaam reports that the setback in the economic development of the colony produced by the fall in rubber has been of a serious character. Rubber cultivation is one of the most important interests, there being probably some 19,000,000 trees planted in the colony, of which about one-half are ready for tapping. All plantations have limited the number of hands employed, and two of the largest have entirely suspended tapping. In order to partially meet the situation, railway and ocean freights have been reduced.

Prospects of the smaller estates are better than those of the larger ones, the working expenses being less. Some of the latter are said to have begun to cut down rubber trees to make room for other crops.

Another difficulty with which planters have had to contend is the absence of a standard quality for East African rubber. There is only one large washing and curing factory in operation, at Muhesa, while several smaller ones are at Usambara. Most of the planters wash the rubber themselves, with the result that it has to be done again in Europe.

BELGIUM'S CONGO COLONY.

A recent issue of a journal published in Liège, Belgium, contained a very interesting contribution on the situation in the Belgian Congo country by Georges Lorand, who, it will be remembered, took such an active part in bringing about reforms in that country, and doing away with the frightful atrocities that went on under the Leopold regime.

Mr. Lorand is not at all optimistic regarding the future of this colony. He cites the fact that the finances of the colony have shown a deficit for a number of years, which at the present time amounts to £6,000,000. He states that the horrors that took place in the days of Leopold have ceased, but that owing to the fact that labor is no longer under compulsion as it was in those days, and owing to the increasing competition of plantation rubber, which has brought prices down to a very low figure, the shipment of rubber from that colony has practically ceased. One phase of the situation to which he calls attention is the fact that not a little of this plantation competition may be attributed to the Belgians themselves, as the Belgian companies now operating in Malaya have an aggregate capitalization of £10,000,000, and are thus quite an important factor in the lowering of rubber prices generally and the practical extinction of the Congo rubber trade. Mr. Lorand further states that there is no cultivation of any sort at the present time in the Congo, and that while much is said about the mining possibilities of the colony, the cost of the necessary railroads would be in the neighborhood of £28,000,000. He concludes by the assertion that if through the exhaustion of home resources the Congo should ever be put on a profitable footing the colony would probably be taken away from the Belgians altogether.

Exports of Balata from Java amounted in 1913 to 2,614,506 pounds, an advance of 1,010,849 pounds over the 1912 exports.

NOTES FROM BRITISH GUIANA.

ALTHOUGH the plantation rubber industry in this colony has not up to the present made very great progress, its possibilities are undoubted. From time to time the Government publishes exhaustive reports with a view to demonstrating how great those possibilities are. Such a report by the Assistant Director of Science and Agriculture, Mr. C. K. Bancroft, has just been published. Its value lies in the fact that it brings all the statistics up to date, that it is exceedingly optimistic, and that Mr. Bancroft, by reason of his long experience in the Federated Malay States, can speak with considerable authority. Mr. Bancroft arrives at the following conclusion:

"There are two primary factors which operate in the cultivation of Para rubber, viz., the cost of bringing areas to maturity and the future cost of production per pound of rubber.

"That the former can be effected in this country, so as to compare not unfavorably with other parts of the world, there appear to be sufficient data in the above report to indicate. With respect to the latter there are no actual data available from which to judge. Figures at my disposal indicate that the cost of production will not be heavy. The low cost of supervision, as compared with other rubber growing countries, and the health of the labor force, are factors which are in favor of a reasonable cost of production of rubber in the colony."

Mr. Bancroft does not think that the cost can ever be as low as 16 cents per pound, "the cost estimated for some of the better plantations in Sumatra, and the lowest which has to my knowledge yet been given in any part of the world," but he thinks that with a market price for the raw product of 48 cents per pound, Para rubber can be cultivated at a fair profit in this colony under proper supervision.

HOW THE EXTENSION OF THE INDUSTRY MAY BE EFFECTED.

Mr. Bancroft goes on to say that the extension of the rubber industry in this colony may be effected in two ways: 1, by the utilization of local capital; 2, by the introduction of foreign capital.

"The former is more likely to operate in the direction of the conversion of previously existing cultivations into rubber cultivations. The latter may be utilized in this way or may be directed towards an extension of the area under cultivation in the colony, viz., the conversion of original forest into rubber cultivations. The conversion of existing areas of sugar into rubber has been extensively employed in North Perak, and Province Wellesley (Malay Peninsula) is receiving attention by one private firm. The employment of foreign capital to convert a previously existing cultivation of coffee, cacao and fruit trees into a rubber cultivation is in operation on one property. These enterprises must be watched with considerable interest."

COST OF ESTABLISHING AN ESTATE.

Mr. Bancroft estimates the cost of opening up from forest and bringing to maturity one acre of rubber in an estate of 500 acres in the interior of the colony, at \$151, as follows: Application and registration fees and survey, 35 cents; underbrushing, felling, etc., \$12; burning, restacking and burning, clearing, \$15; lining and holing, \$7; planting, \$2; cost of plants, \$2.50; roads, \$5; weeding, 1st year, \$20. 2nd year, \$12, 3rd year, \$10, 4th year, \$7, 5th year, \$6; superintendence, \$35; building manager's and two overseers' quarters, ranges for coolies, \$15; contingencies, \$2.15—a total of \$151 exclusive of factories, or \$175 inclusive of factories. On the low lying lands an item of \$15 per acre has to be included for drainage.

RAINFALL STATISTICS.

The mean annual rainfall taken at 24 recording stations near the coast, during the year was 84.4 inches for the County of Berbice, 102.08 inches for the County of Essequibo, and 98.37 inches for the County of Demerara. The mean annual rainfall

for 18 districts away from the coast for 1911 was 108.93 inches. The distribution of the rainfall in this colony is such as is favorable to the growth of the plant, more particularly in the interior of the colony and on the lands situated some distance from the coast.

SOIL CONDITIONS.

The interior lands are thus better served by rainfall than the coast lands. So are they from the point of view of soil conditions.

The different soils on which the plant is being cultivated may be roughly divided as follows: 1—The heavy clay soils of the front lands. 2—Those further back and on the banks of the rivers, of a looser texture and usually having surface layers rich in organic matter, overlying a clay subsoil. 3—The orange to red laterite soils away from the coast, comprising undulating lands and possessing layers of various depths.

British Guiana lies within what may be termed the rubber zone and is adjacent to the home of the Para rubber plant. By selection, areas can be obtained which comprise soils resembling closely those on which the plant is cultivated in the East.

COST OF LABOR.

Mr. Bancroft points out that the cost of labor is higher than in the East, but he thinks it is more efficient. The labor is both negro and East Indian, and the wages vary from 32 cents to 45 cents a day for men, from 20 to 25 cents for women, and from 12 to 16 cents a day for children, but the usual working day in this colony is 10 hours, as compared with 9 (8 being the usual time of employment) in the Malay Peninsula. "A sufficient supply for the maintenance and extension of the areas at present under cultivation appears to exist. It is doubtful, however, that a large extension of the present industry could be undertaken without drawing labor from other industries or from foreign countries."

TAPPING RESULTS.

Experimental tapping has been conducted at various stations which cover a large area of the colony and comprise all classes of soils on which the plant is being cultivated in the colony, except the heavy front clay lands. "At Onderneeming a yield of about 4 pounds of dry rubber per tree is being maintained; at the Hills Estate the average for a tree in nine months is 1 pound, 12½ ounces. Three hundred and seventy-nine trees are now being tapped daily and the cost of collection of 111 pounds, 8 ounces, 14 drams of rubber during the month of January is given at about 20 cents per pound of dry rubber. Two men were employed, where under proper estate conditions one would be sufficient, and if women and children were employed the cost would be reduced. The cost of transport in the colony is low, while it lies adjacent to the principal market for Para rubber, the United States, and direct shipment could be effected to that country. The freight charges for rubber to New York amount to only \$4 a ton."

CONCLUSION.

Mr. Bancroft's final conclusion is that "it is probable that the establishment of rubber plantations by manufacturers of prepared rubber goods will at some future time be taken up on a larger scale than has hitherto been done, more particularly if the quality of plantation rubber can be made to approximate more closely to that of the wild Brazilian product. The proximity of British Guiana to the principal market for rubber, the United States, should offer inducement to the introduction of capital from that country for development of rubber in this colony. For this reason the only existing enterprise of this nature in the colony must be regarded with interest."

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

NOTES FROM PARA.

From an Overseas Correspondent.

PARA'S ARBOR DAY AND THE LATE DR. HUBER.

THE importance of the tree as an element of agricultural progress has been officially recognized by the State of Para in the form of the "Tree Festival," held on June 7 at the Experimental Culture Farm of the Lauro Sodré Institute, about half an hour's distance by rail from the city. The festival was attended by the principal State officials and by representatives of all social classes. Among those present were Dr. Enéas Martins, Governor of the State of Para; Dr. Dionysio Bentes, Intendant of Belem, and Dr. Ferreira Teixeira. Senhor Enéas Pinheiro delivered the official address.

More than twenty trees were then planted, each being associated with the name of the donor and with the objects intended to be perpetuated. The trees were all of practical utility for Brazilian agriculture, and were presented by the Governor, Sra. Martins, Dr. João Barbosa Rodrigues, Jr., delegate of the Association for Brazilian Commercial Expansion, and many others. One tree was given by the director of the farm, Senhor Leopoldo Teixeira, in memory of the late Dr. Huber, to whom various sympathetic allusions were made.

Dr. Huber's share in the development of Para was, moreover, the subject of an address by Dr. Ignacio Moura, at the conclusion of which a portrait of the deceased scientist was unveiled, which was later in the day placed in the Museu Goeldi. A subscription was then opened, applicable to the extension of the Botanic Section of the Museu Goeldi, as a memorial to Dr. Huber. An official visit was made to his grave during the afternoon.

This "Tree Festival," it will be seen, gave Dr. Huber's many Para friends an opportunity which was not available at the time of his death, on February 18, of expressing their sympathy.

STATE AGRICULTURAL INSTRUCTION IN PARA.

At a meeting held under the presidency of Dr. Dionysio Bentes, Intendant of Belem, an association has recently been founded, with the object of promoting agricultural instruction in the State of Para. In addressing those present, Dr. Ferreira Teixeira described the result of such training in the United States and other countries. The provisional board of directors includes Dr. Dionysio Bentes, Dr. Leopoldo Teixeira and Senhor Napoleão de Oliveira. The president is Dr. Ferreira Teixeira and the secretary Dr. Enéas Pinheiro. Deputy Vianna Coutinho has published a number of suggestions for the operation of the new association.

THE PROPOSED INCREASED SUBSIDY FOR AMAZON STEAMERS.

In view of the increased subsidy asked by the Amazon River Steam Navigation Co., the Para Commercial Association has represented the necessity, in order to compete with private lines, of the above-named company reducing its rates to the Upper Acre and other points to a level which would still prove remunerative, without diminishing the frequency of sailings. Seeing that the company enjoys many favors under existing regulations, the proposed additional subsidy is characterized as needless.

PERMANENT EXPOSITIONS OF BRAZILIAN RUBBER.

The Commercial Association of Manaus has addressed a letter to the State Governor, asking him to secure the co-operation of the State of Para and of the Federal government in the establishment of permanent expositions of Brazilian rubber in the centers of consumption. Arrangements are suggested of a nature similar to those existing in Europe for Brazilian coffee. In this way it is hoped to offset the efforts of English plantation companies to promote the sale of rubber from the Far East.

CONGRESS OF CHAMBERS OF COMMERCE.

Dr. José Rodrigues Viera has been appointed delegate to represent the Commercial Association of Manaus at the Interna-

tional Congress of Chambers of Commerce and Commercial Associations, to be held in Paris next June.

THE BRAZILIAN RUBBER CRISIS.

Discussing in the columns of the "Folha do Norte" the recently issued report of British Consul Michell, of Para, quoted in THE INDIA RUBBER WORLD for July (page 562), Senhor J. Simão da Costa remarks that the constant immigration of satisfactory workers is not to be looked for in a region so full of climatic and natural obstacles. He adds that Brazil could never have attained its present importance as a rubber exporting nation without the co-operation of those intermediaries to whom Consul Michell attributes the high cost of the article.

Moderation has been urged by Brazilian Senators in state and municipal loans, in which it is advised to refrain from taking undue advantage of such credit facilities as may be available.

A deputation of French bankers has had interviews with the Brazilian Minister of Finance, Dr. Rivadavia Corrêa, the result of which is said to have been an understanding that as soon as the operation has been approved by the Brazilian Congress the above-named bankers will advance to Brazil the equivalent of \$20,000,000 in gold.

THE USE OF EXPLOSIVES IN AGRICULTURE.

The above topic formed the subject of a paper read by Mr. Harold Hamel Smith, editor of "Tropical Life," at the Third International Rubber Conference. In THE INDIA RUBBER WORLD of April, 1913 (page 352), this paper was reproduced. Since then experiments on the subject have been carried out in Ceylon by Mr. Doolan, Australian representative of Nobel's Explosive Co., Hamburg. While a large number of planters were present, some of them were apparently of the opinion that the ground chosen did not represent the soil in which explosives are chiefly required, being of too loose and deep a character. Mr. H. F. Macmillan, the superintendent, subsequently conducted three other experiments, intended to show the radial effects of dynamite in light and heavy soils, the latter being of a type specially belonging to Ceylon.

Another feature of the experiments was the blasting of stumps under the direction of Mr. Macqueen, a dynamite expert of the Nobel's Explosive Co., Glasgow. This took an equipment costing 75 cents, and required three coolies to work two and a half hours to completely remove the shattered portions and roots.

The blasting of obstructive boulders is one of the most dangerous operations in connection with agricultural explosives, owing to the risk of their exploding. Much can be done to prevent this, however, by covering the boulders with leafy branches.

Mr. Macmillan's pamphlet forms Bulletin No. 8 of the Department of Agriculture, Ceylon, for 1913, and is supplemented by a dozen illustrations showing the various operations and their effects. This pamphlet seems destined to carry this important question a long step forward.

THE WICKHAM PATENT PROCESSES.

Satisfaction has been expressed in Ceylon at the premium of about 35 per cent. at which shares have been changing hands in the company which is working the Wickham patents. In pursuance of his right to nominate one member of the board, Mr. Wickham has chosen Mr. F. Crosbie-Roles, well known on this side of the Atlantic, and editor of the "Times of Ceylon."

The Wickham process is protected throughout the world, and it is estimated that an income of less than \$12,500 a year will pay all expenses and will furnish a profit of more than 20 per cent. on the capital issued. A number of planters are shareholders, which is regarded as a favorable sign.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

- 1,099,939. Non-skid device. J. Sadus, Filbert, W. Va.
1,100,002. Head for insulating machines. C. L. Van Ness, Akron, Ohio.
1,100,025. Combined comb and cleaner. J. M. Morin, Ben Lomond, Cal.
1,100,027. Wheel. J. Putter, St. Joseph, Mo.
1,100,030. Padded horseshoe. C. E. Sheldon, assignor to The Whitman & Barnes Manufacturing Co.—both of Akron, Ohio.
1,100,032. Tire tool. C. E. Speck, St. Marys, Ohio.
1,100,039. Tensioning device. W. C. Tyler and E. Nall, assignors to The Goodyear Tire & Rubber Co.—all of Akron, Ohio.
1,100,040. Resilient wheel. C. H. Weiskopf, Jr., Los Angeles, Cal.
1,100,133. Spring cushioned wheel. S. C. Hoen, assignor of one-half to A. Ahlberg—both of St. Paul, Minn.
1,100,137. Spring wheel. E. F. Krell, Detroit, Mich.
1,100,156. Corset comprising intertwined elastic straps. M. G. Southworth, Fayetteville, Ark.
1,100,242. Spring wheel. J. C. Howells, Renton, Wash.
1,100,282. Tire trunk. J. Berg, New York, N. Y.
1,100,311. Anti-skidding device. J. W. Leasure, Bradford, Pa.
1,100,319. Rubber shoe of the Oxford type. H. Moore, New York, N. Y.
1,100,406. Vanner belt. W. W. Spadone, assignor to Gutta Percha & Rubber Manufacturing Co.—both of New York, N. Y.
1,100,450. Diaper cover. A. H. Stern, assignor to Stern Specialty Co.—both of New York, N. Y.
1,100,451. Tire head making machine. W. C. Stevens, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
1,100,459. Felt hat making machine which comprises an india rubber pad. A. Turner and T. Robinson, Denton, Manchester, England.
1,100,472. Demountable rim for pneumatic tires. W. E. Copithorn, Natick, Mass.
1,100,534. Tire fastening means for vehicle wheels. J. L. Cecil, Tippencanoe, Ohio.
1,100,654. Concentrator belt. R. N. Church, Spokane, Wash., assignor to The Republic Rubber Co., Youngstown, Ohio.

1,100,670. Boot and composition. H. C. Carey, Brockton, Mass.

Patents

- 45,925. Confection or chewing gum tablet. C. A. Crane, Cleveland, Ohio, assignor to E. J. Noble, New York, N. Y.
- 45,926. Tread surface of tire. H. P. Hansen, assignor to Chicago Cycle Supply Co.—both of Chicago, Ill.
- 45,933. Tread surface of tire. H. P. Hansen, assignor to Chicago Cycle Supply Co.—both of Chicago, Ill.
- 45,944. Tire pump. C. W. Munzel, assignor to Munzel Bros.—both of Buffalo, N. Y.
- 45,962. Rectal dilator. D. Rhodes, Washington, D. C.
- 45,974. Air pump casing. I. K. Stewart, assignor to Stewart-Warren Speedometer Corp.—both of Chicago, Ill.
- 45,975. Rubber bag for hat brim press machine. W. E. Turner, assignor to Turner, Atherton & Co., Ltd.—both of Denton, near Manchester, England.

Trade Marks

- 69,329. Hudson & Thurber Co., Minneapolis, Minn. The word *Hermil*. For rubber belting, hose and packing.
- 74,597. The Texas Co., Port Arthur, Tex. The letter *T* in the center of a five-point star. For asphaltum, waterproof roofing, saturated felt, etc.
- 76,941. Live Air Co., Oakland, Cal. The words *Live air*. For puncture proofing substances.
- 77,444. The Resilia Corporation, San Francisco, Cal. The word *Resilia*, surrounded by a rectangular border. For cleaning and softening rubber products.
- 77,535. I. B. Kleinert Rubber Co., New York, N. Y. The word *Baby*. For baby pants.
- 78,081. I. B. Kleinert Rubber Co., New York, N. Y. The word *Eleg*. For dress shields.
- 78,082. I. B. Kleinert Rubber Co., New York, N. Y. The word *Green*. For dress shields.
- 78,083. I. B. Kleinert Rubber Co., New York, N. Y. The word *Gloria*. For dress shields.
- 78,084. I. B. Kleinert Rubber Co., New York, N. Y. The word *Brassiere*. For dress shields.
- 78,085. I. B. Kleinert Rubber Co., New York, N. Y. The word *Farcoola*, with an ornamental rectangular border. For dress shields.
- 78,221. I. B. Kleinert Rubber Co., New York, N. Y. The word *Kim*. For dress shields.
- 78,331. Phillips' Patents, Ltd., London, England. The word *Rubacrets*. For rubber heel pads and tips for boots and shoes.
- 78,389. J. Einstein, Inc., New York, N. Y. A conventional design which embraces the word *Foot*. For rubber soles, insoles and shoe uppers.

ISSUED JUNE 30, 1914.

- 1,100,712. Tire for vehicles. R. B. Calcutt, Chicago, Ill.
- 1,100,719. Demountable rim. S. C. Eddy, Kalamazoo, Mich.
- 1,100,726. Pneumatic tire. H. B. Gillette, assignor to The Peninsula Tire & Rubber Co., both of Grand Rapids, Mich.
- 1,100,758. Boot or shoe having an elastic gore. D. McAuslin, Dunedin, New Zealand.
- 1,100,768. Mixing machine for india rubber and similar compositions. A. Olier, assignor to Société A. Olier & Cie.—both of Clermont-Ferrand, France.
- 1,100,778. Fountain pen. K. Räuchle, Hennef-on-the-Sieg, Germany.
- 1,100,810. Tire. H. Wood, Philadelphia, Pa.
- 1,100,815. Vehicle wheel rim. J. A. Anglada, New York, N. Y., assignor to Universal Rim Co., Chicago, Ill.
- 1,100,816. Demountable rim for automobile wheels. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,100,829. Hose construction. J. F. Joseph, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
- 1,100,861. Vehicle wheel rim. J. A. Anglada, New York, N. Y., assignor to Universal Rim Co., Chicago, Ill.
- 1,100,875. Demountable rim. L. J. D. Healy, New Britain, Conn.
- 1,100,934. Vulcanizing press. J. K. Williams, assignor to The Williams Foundry Machine Co.—both of Akron, Ohio.
- 1,100,950. Tire armor. M. J. Broderick, Philadelphia, Pa.
- 1,100,963. Lawn sprinkling device. W. C. Eickman, Dayton, Ohio.
- 1,101,053. Molding machine for rubber compound. W. L. Bland and O. Bland, Chicago, Ill.; said W. L. Bland assignor to said O. Bland.
- 1,101,065. Combination clothes brush. C. G. Davis, Manistee, Mich., assignor to C. G. Davis Co., Lomax, Ill.
- 1,101,082. Spring wheel. C. Kuhn and G. Zahn, Rochester, N. Y.
- 1,101,103. Method of making straight side tires. W. C. Stevens, assignor to The Firestone Tire & Rubber Co.—both of Akron, Ohio.
- 1,101,112. Elastic connecting device. M. Albertz, Cologne, Germany.
- 1,101,195. Spring wheel. S. T. Kronenberg, assignor of fifty-five one-hundredths to J. C. Wolfram—both of Pittsburgh, Pa.

1,101,198. Tire grip. W. B. Lashar, assignor to Weed Chain Tire Grip Co.—both of Bridgeport, Conn.

- 1,101,281. Insulating coating and method of forming and applying the same. H. B. Holmes, Park Ridge, and J. W. Harris, Wilmette, Ill., assignors to Western Electric Co.
- 1,101,293. Spring wheel. J. Kunkel, Brookville, Ind.
- 1,101,386. Demountable rim for automobile wheels. E. K. Baker, assignor to Universal Rim Co.—both of Chicago, Ill.
- 1,101,406. Mileage recorder for pneumatic tires. C. L. Clise, Berkeley, Cal., and R. Morgencier, Oakland, Cal.
- 1,101,457. Auxiliary tire attachment. C. E. Legge, Johannesburg, Transvaal, South Africa.
- 1,101,487. A boot or shoe sole, comprising rubber-impregnated felt. R. T. Elwell, Trenton, N. J.

Trade Mark

- 71,065. Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Conn. A four-leaf clover design, with the letters *G. R. R. C.* and the words *Goodyear's clover leaf* enclosed between concentric circles. For rubber boots and shoes.
- 77,387. Noyes Comb Co., Binghamton, N. Y. The word *Tiger* above a drawing of a tiger's head. For toilet combs.
- 77,652. Kabo Corset Co., Chicago, Ill. The word "*Com-fit*." For garters and arm bands.

ISSUED JUNE 30, 1914.

- 1,101,545. Wrapping and unwrapping machine. C. Kuetzel, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.
- 1,101,680. Spring wheel. C. V. Brandt, Richmond, Va.
- 1,101,702. Spring tire. H. M. Lakoff, Philadelphia, Pa.
- 1,101,708. Means for inflating pneumatic tires of motor cars and other vehicles. N. A. Nielson, Marton, New Zealand, assignor of one-half to W. S. Marshall, Mangaraupi, New Zealand.
- 1,101,732. Molding and vulcanizing machine. H. J. Doughty, Edgewood, R. I., assignor to Doughty Tire Co., Portland, Me.
- 1,101,741. Demountable wheel rim. C. G. Hawley and E. K. Baker, assignors to Universal Rim Co.—all of Chicago, Ill.
- 1,101,756. Fireman's face mask. J. Nesvadra, assignor of one-third to S. Krna—both of Binghamton, N. Y.
- 1,101,828. Vehicle tire. G. V. Baillard, New York, N. Y.
- 1,101,881. Resilient wheel. W. S. Rait, Chicago, Ill.
- 1,101,930. Pneumatic tire. H. F. Heycock, Martinborough, New Zealand.
- 1,101,959. Fountain pen. C. J. Renz, New York, N. Y.
- 1,101,973. Breast pump. C. A. Tatum, assignor to Whitall Tatum Co.—both of New York, N. Y.
- 1,101,984. Hose reel. W. M. Barret, Shreveport, La.
- 1,102,017. Repair device for pneumatic tires, etc. T. C. Dobbins, Los Angeles, Cal., assignor to Weed Chain Tire Grip Co., New York, N. Y.
- 1,102,061. Repair patch for pneumatic tires. V. P. Le Roy, Newburgh, N. Y.
- 1,102,084. Tire protector. M. T. K. Rosenow, Metuchen, N. J.
- 1,102,103. Anti-skidding device for vehicle wheels. H. J. Steigerwald, Auburn, N. Y.
- 1,102,109. Guard for calendering machines. J. B. Wagg and J. A. Johnson, assignors of one-third to W. L. Wagg, all of Appleton, Wis.
- 1,102,178. Apparatus for heating coated fabric. W. B. Westcott and E. W. Westcott, assignors to Walpole Shoe Supply Co.—all of Boston, Mass.

Index

- 46,035. Wheel. J. E. Strietelmeier, Cincinnati, Ohio.

Trade Marks.

- 64,959. A. Stein & Co., Chicago, Ill. Picture of child and dog tugging at a garter. For hose supporters.
- 67,690. Hudson Mechanical Rubber Co., Trenton, N. J. The word and numerals "*Hudson 600*." For a composition used in making washers, etc.
- 74,999. The Continental Supply Co., Youngstown, Ohio. The words *Severe service* in a rectangular space across a circular drawing. For power transmission and conveyor belts.
- 75,558. True-Fit Waterproof Co., Inc., New York, N. Y. The words *True-fit brand waterproof* enclosed in ornamental border. For raincoats, etc.
- 77,119. The De Vilbiss Manufacturing Co., Toledo, Ohio. The word *Oblo*. For rubber bulbs.
- 77,271. Essex Rubber Co., Trenton, N. J. The word *Servisol*. For rubber sheet packing and round gasket tubing.
- 77,272. Essex Rubber Co., Trenton, N. J. The word *Pacrite*. For fibrous sheet packing.
- 77,273. Essex Rubber Co., Trenton, N. J. The word *Spyrisol*. For rubber and duck packing.

- 77,274. Essex Rubber Co., Trenton, N. J. The word *Valrex*. For asbestos packing.
- 77,275. Essex Rubber Co., Trenton, N. J. The word *Oakcrete*. For rubber sheet packing.
- 77,276. Essex Rubber Co., Trenton, N. J. The word *Heattris*. For asbestos sheet packing.
- 77,278. Essex Rubber Co., Trenton, N. J. The word *Motox*. For asbestos sheet packing.
- 77,279. Essex Rubber Co., Trenton, N. J. The word *Execo*. For rubber sheet packing and tubing.
- 77,437. Earle & Lyon, Salt Lake City, Utah. The word *Oro*. For bandages, belts, elastic stockings, etc.
- 77,950. S. Cupples Wooden Ware Co., St. Louis, Mo. The word *Arrow* and drawing of an arrow piercing the letters *S C*. For fruit jar rings.
- 77,993. Warner-Quinlan Asphalt Co., Syracuse, N. Y. Illustration of Indian in war costume, with spear and shield. For asphaltum.
- 78,039. Texas Gum Co., Temple, Tex. The word *Mello-mint*. For chewing gum.
- 78,226. Apsley Rubber Co., Hudson, Mass. Illustration of a boot, with a band around the leg near the top. For rubber boots and shoes.
- 78,282. Noyes Comb Co., Binghamton, N. Y. The word *Beaver* above illustration of the animal. For toilet combs.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, in the case of these listed below was in 1913.)

Notes Patents for American Inventions

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 4, 1914.]

- 3,350 (1913). Tool for tapping rubber trees. Central Tool Works, St. Mary's Row, Birmingham.
- 3,386 (1913). Garden hose supports. F. W. Haines, Willandra, Manning Road, East Malvern, Victoria, Australia.
- 3,435 (1913). Rubber attachment for insertion in a helmet for lessening the force of a blow. J. Ayres, 28 Lexington street, London, W.
- 3,488 (1913). Tread bands for wheel tires. J. E. Fargher, Fire Station, Stanley street, Bury, Lancashire.
- 3,489 (1913). Wheel tires. J. Cairns, 27 Payne avenue, Hove, Brighton.
- 3,531 (1913). Probes, cannulas, bougies, drainage tubes and like instruments constructed of india rubber. L. M. C. Charnaux, 4 Rue Lucas, Vichy, Allier, France.
- 3,619 (1913). Suspenders for socks, etc. Walker Garter Co. and H. W. Taylor, 30 Graham street, St. Paul's, Birmingham.
- 3,707 (1913). Coagulating latex. E. J. Byrne, Norwich Union Buildings, St. James street, London.
- 3,718 (1913). Wheel tires. G. W. Beldam, Boston Lodge, Ealing, London, and A. U. B. Ryal, "Granville," Windmill Road, Brentford, Middlesex.
- 3,798 (1913). Combined gaiter and golosh. A. O. Rowbotham, "Merri-vale," Hulmes Road, Clayton Bridge, near Manchester.
- 3,904 (1913). An elastic body or core for use in an outer tire cover of ordinary construction. A. Witzel, 45 Wilhelmstrasse, Ludwigsbürg, and A. Federer, 19 Buchsenstrasse, Stuttgart—both in Wurtemberg, Germany.
- 3,927 (1913). Spring wheels. S. Brown, 40 Whitecross street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 10, 1914.]

- 3,948 (1913). Filter for gaseous fluids, comprising an elastic pad. O. Happel, 33 Wrangelstrasse, Bochum, Westphalia, Germany.
- 4,011 (1913). Spring wheel with continuous outer rigid ring and pneumatic cushions. G. Cialente, 38 Via Magenta, Rome.
- 4,056 (1913). Rubber grip for billiard cue. M. Brooser, 2 Wesselynergasse, Budapest.
- *4,114 (1913). Solid rubber tread member for vehicle wheels. C. D. Galvin, 33 Cove Road, Merchantville, N. J., U. S. A.
- *4,195 (1913). Block tires, and special apparatus for making. B. H. Divine, Utica, N. Y., U. S. A.
- 4,207 (1913). Bat handles comprising cane and rubber sections. A. C. Taylor, 46 Melbourne avenue, Bowes Park, London.
- 4,211 (1913). Rubber substitutes. J. R. McPhie and M. E. McPhie, 56 Holly avenue, Jesmond, Newcastle-on-Tyne.
- 4,236 (1913). Tread bands for wheel tires. T. Dudson, 42 High street, Abertridwr, Glamorganshire.
- *4,302 (1913). Detachable rim attachments to wheels. F. R. Barker, 1049 Beacon street, Brookline, Mass., U. S. A.
- 4,313 (1913). Tire attachments to rims. C. T. B. Sangster, Dale Road, Bournbrook, near Birmingham.
- 4,329 (1913). Elastic ring projectile for use in games. E. Hackh, 2 Gutbrodstrasse, Stuttgart, Wurtemberg, Germany.

4,488 (1913). Rubberized leather manufacture. J. Herbert, 56 Radpole Road, Fulham, London.

4,558 (1913). Means for connecting the ends of rubber tires or ropes. H. Brook, 193 Church street, Blackpool, and J. C. Burton and H. H. Burton, Granby Rubber Works, Post Office Place, Leicester.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 17, 1914.]

- 4,600 (1913). Wheel tires. J. F. F. W. Ure, 13 Trinity Gardens, Folkestone, Kent.
- 4,634 (1913). Tool for removing and replacing tires. J. R. Brown, Dresden House, Llanidloes, Montgomeryshire.
- 4,645 (1913). Tennis racket frame comprising rubber spring. S. Brown, 40 Whitecross street, London, E.C.
- 4,649 (1913). Means for expanding a ring carrying an elastic tire for assemblage in a wheel rim. J. S. Foley, 5 High street, West Bromwich, and F. W. Baker, Hagley Road, Stourbridge, Worcestershire.
- 4,663 (1913). Plastic compositions formed of waste vulcanized rubber, gutta percha, caoutchouc, etc. A. Oetker, 124 Flottbeker Chaussee, Ottensen, Altona, Germany.
- 4,814 (1913). Sponge holders of waterproof fabric. H. K. Heide, 15 Preysingstrasse, Munich, Germany.
- 4,821 (1913). Artificial teeth with coned recesses for the rubber plate. H. A. Wienand, 10 Tannenstrasse, Frankfurt-on-Main, Germany.
- 4,823 (1913). Molded combs formed with solid back and hollow handle. H. O. Traun, 59 Meyerstrasse, Hamburg, Germany.
- *4,846 (1913). Spring wheel. W. S. Hancock, 1806 Higgs Place, N.W., and A. V. Mitchell, 1529 New Hampshire avenue—both in Washington, D. C., U. S. A.
- *4,885 (1913). Spring wheel. C. I. Wright, Berkeley, Cal., U. S. A.
- 4,887 (1913). Stoppers for jars, etc. W. W. Whalley, 133 Speakman Road, St. Helens, Lancashire.
- 4,889 (1913). Vehicle wheels. C. Challiner, The Glen, Anson Road, Victoria Park, Manchester.
- 4,905 (1913). Tire attachments to rims. J. C. Moore, Nightingale Hall, Lower Edmonton, London.
- 4,913 (1913). Devulcanizing india rubber. E. Zappert, 27 Chancery Lane, London.
- 4,929 (1913). Wheel tires. E. B. Killen, 27 Queen Victoria street, London.
- 5,019 (1913). Spring wheel with rubber tread sections. J. R. C. Hodgson, 214 Jarvis street, Toronto, Ont., Canada.
- 5,044 (1913). A rubber fabric or like flexible mud-guard. R. O. Zimmerling, 33 Ladysmith avenue, East Ham, London.
- 5,081 (1913). Hat fastening device comprising an elastic or flexible strip. H. W. Hulse, 127 Villa Road, Handsworth, Birmingham.
- 5,083 (1913). Fibrous compositions containing rubber, gutta percha, etc. T. C. Redfern, 24 Woodend Lane, Hyde, Cheshire.
- 5,084 (1913). Molding boot soles from rubber-containing compositions. T. C. Redfern, 24 Woodend Lane, Hyde, Cheshire.
- *5,089 (1913). Vulcanizing presses. R. Bridge, Castleton Ironworks, Castleton, Lancashire. (Williams Foundry & Machine Co., Akron, Ohio, U. S. A.)
- 5,169 (1913). Air tubes for wheel tires. C. R. Crombie, Dalmeny street, Leith Walk, Edinburgh.
- 5,214 (1913). Liner or gaiter for repairing damaged pneumatic tires or for preventing punctures. C. Hunter, Bowhill Hotel, Cardenden, Fifeshire.
- 5,242 (1913). Insulating glove of rubber. St. Helens Cable & Rubber Co. and H. Evans, Arpley, Warrington, Lancashire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 25, 1914.]

- 5,299 (1913). Spring wheels. A. T. Smith, 30 St. John's Road, Birkdale, Lancashire.
- 5,355 (1913). Non-sticky composition for automatically closing punctures in tires. E. C. R. Marks, 46 Lincoln's Inn Fields, London.
- 5,356 (1913). Artificial feet. B. Graham, 118 Great Victoria street, Belfast.
- *5,434 (1913). Spring wheel with continuous outer resilient ring. A. K. Lovell, 129 Olive street, New Haven, Conn., U. S. A.
- 5,542 (1913). India rubber solution in making cup leather packings. A. R. Trist, 4 Lloyd's avenue, London.
- 5,591 (1913). Tire tool. J. Thresher, The Terrace, Hemsby, Norfolk.
- 5,623 (1913). Spring wheel. A. Tetétleni, 10 Jozsef ter. Budapest.
- *5,642 (1913). Feeding bottle. E. W. Morgan, Spring City, Pa., U. S. A.
- 5,676 (1913). A metal rim, or the metal band to which a rubber tire is vulcanized. R. V. Stick, 14 Kinglake street, Liverpool.
- 5,694 (1913). Fastening for goloshes. R. Schreiber, Karoschke, near Obernigk, Germany.
- *5,739 (1913). Infants' fabric bath tub. H. Sefton-Jones, 285 High Holborn, London. (Heaton Manufacturing Co., Wilmington, Del., U. S. A.)
- 5,776 (1913). Solid rubber tire secured by the intumed edges of the rim. I. L. Hindle, 24 Irton Road, Southport, Lancashire.

NEW ZEALAND.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, MAY 7, 1914.]

- 34,484 (1913). Rubber tire and attachment and detachment to wheels. E. P. Killen, 27 Queen Victoria street, London, Eng.
- 34,442 (1913). Pad garter. C. A. Hamlin, Auckland, New Zealand.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

- 465,476 (November 29, 1913). Process for the manufacture of rubber latex. S. M. B. B. L.
- 465,515 (November 22). Wheel tire. A. W. Livingston.
- 465,544 (December 1). Air chamber for pneumatic automobile tires. W. Dunbar.
- 465,599 (December 2). Anti-skid device for covers and pneumatic tires of bicycles and automobiles. A. Jablonsky.
- 465,600 (December 3). Process for the manufacture of pneumatic tires and covers with them. T. Sloper.
- 465,701 (December 1). Process of making an elastic fabric, the rubber in which is completely hidden by a fabric superimposed on its two faces by means of only two joints, and the fabric obtained by this process. Lafrère Frères & Cie.
- 465,735 (December 4). Improvements in vehicle tires. C. Flake Forster.
- 465,812 (December 6). Pneumatic sole for footwear. H. Wagener.
- 465,865 (December 3). Protection of pneumatic tires. M. Brun.
- 465,903 (February 17). Process of treating used covers of pneumatic tires, with the object of giving them a new use. G. Reynaud.
- 465,950 (October 25). Imperforable cover for wheel tires. A. de la Housaye.
- 466,085 (December 2). Improvements in elastic vehicle tires. J. Spyker.
- 466,048 (December 11). Pneumatic tire. J. J. Luck.
- 466,064 (December 11). Elastic tire for vehicle wheels. T. Emontelle and P. Schaste.
- 466,155 (February 22). Movable protector for wheel tires. G. J. Krol.
- 466,141 (December 13). Improvements in manufacture of rubber buttons for gaiters and other uses, and in the manner of fixing them. R. Brack.
- 466,235 (February 25). Rubber footwear. Etablissements Hutchinson.
- 466,243 (December 16). Process for regeneration of rubber. Xylos Rubber Co., Ltd.
- 466,270 (February 26). Metallic wheel with central pneumatic tire. D. Crayssac.
- 466,376 (February 28). Elastic fitting, specially applicable to wheel tires and its method of manufacture. L. V. Pinca.
- 466,381 (March 1). Perfected process for the manufacture of an elastic fitting specially applicable to wheel tires. Madame L. Marsan.
- 466,399 (December 19). Improvements in pneumatic tires. Gray & Sloper.
- 466,484 (December 22). Improvements in tires. R. M. Thorp.
- 466,492 (December 23). Improved tire for vehicle wheels. L. H. Honrig-hausen.
- 466,501 (December 23). Mechanical process for applying an adhesive substance to rubber tires. P. Blache.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

- 275,716, Class 39b (November 1, 1912). Process for coagulation of rubber latex. C. H. Boehringer Sohn, Nieder Ingelheim-am-Rhein.
- 275,857, Class 39b (June 3, 1913). Process for producing plastic masses through the action of aldehydes on albuminous substances. Hans Blücher, Hardenbergstrasse, Leipzig, and Ernst Krause, Sedanstrasse 6, Berlin-Steglitz.
- 275,816, Class 63c (August 20, 1912). Hollow rubber tire, in which the tread is specially arranged with portions cut out. Max Cyrus Overman, New York.
- 276,185, Class 12c (March 29, 1913). Process for purification of isoprene. Dr. Iwan Ostromissinsky, Moscow.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

- 265,304 (May, 1914). Improvements in processes and mulling appliances for the manufacture of rubber articles. F. T. Roberts, Trenton and Cleveland, U. S. A.
- 265,223 (May, 1914). Felt rubber. J. Burthaul, Rue du Port Neuf, Bruxelles.
- 265,559 (June, 1914). Rubber substitute with a basis of acetyl-cellulose, pellicles and varnishes, as well as oilcloths, rubbered fabrics, imitation leathers and like substances. Actien Gesellschaft für Anilin Fabrikation, Berlin S. O. 36.
- 265,698 (June, 1914). Protecting hoops for the rims, armatures and rubber of solid tires. Continental, Société Anonyme de Caoutchouc Manufacture, Paris.
- 265,872 (June, 1914). Rubber insulator for protection of flooring. F. Range, Tuckum, Russia.
- 265,942 (June, 1914). Tent with metallic frame. E. Christophe and R. Coulon, Bruxelles.

MARKED DROP IN GUAYULE RECEIPTS.

United States receipts of Guayule rubber for the ten months ending April 30, were: 1912—12,215,866 pounds; 1913—8,688,107 pounds; 1914—1,415,894 pounds.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

An importer in the Near East desires correspondence (in French) with American exporters of corsets, garters, etc. Prices should be quoted c. i. f. port of entry. Report No. 13,364.

A firm of general importers in the Levant is in the market for American boots, shoes and rubbers of all kinds. Correspondence should be in French and prices quoted c. i. f. city of destination. Report No. 13,368.

An American consular officer states that a firm in his district operating a large department store desires to secure c. i. f. quotations from American manufacturers of rubbers, overshoes, etc. Correspondence may be in English. Report No. 13,369.

A manufacturer of suspenders in a Mediterranean country desires to procure direct from American manufacturers suspender elastic for use in his factory. Correspondence may be in English, but prices should be reduced to Italian lire if possible and should be quoted including delivery at port of destination, samples accompanying quotations if convenient. Report No. 13,385.

A firm of wholesalers and importers of rubber goods doing a considerable business throughout Italy desires direct connection with American manufacturers of rubber goods of all kinds, being particularly interested in and desiring quotations on the following articles: Rubber cloth for beds and hospitals; rubber cloth and varnished cloth for balloons and dirigibles; automobile and bicycle tires; rubbers and rubber heels; asbestos and rubber machinery, furnishings and supplies. Correspondence in Italian preferred, though French is understood. Prices should be quoted c. i. f. Genoa or Venice, and weights and measures should be in the metric system. Report No. 13,405.

A wagon and automobile manufacturer in a European country desires the agency of a standard make of automobile tire. The inquirer is said to be well equipped to handle such a line successfully. Report No. 13,435.

BIDS SOLICITED FOR GOVERNMENT SUPPLIES.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until August 4, under schedule 7026, on fire hose.

LATE CUSTOM RULING

The protest of W. A. Walker against the assessment on raincoats of 50 per cent. ad valorem, as cotton wearing apparel, and the attempt to prove that rubber predominated in the make-up of these garments, were not sustained, the Government analyst finding cotton to be the component of chief value.

FIRE HOSE AWARDS.

Contracts for 5,000 feet of fire hose and for rubber tires and tubes were recently awarded by the fire department of New York City to the Empire Rubber & Tire Co., of Trenton. Other recently awarded contracts include: Fort Worth, Texas, 5,000 feet to the Eureka Fire Hose Co., of New York; New Bedford, Massachusetts, 2,000 feet to the C. C. C. Fire Hose Co., of Boston; Scranton, Pennsylvania, 4,000 feet to the New Jersey Car Spring & Rubber Co., of Jersey City; Passaic, New Jersey, 5,000 feet to the United & Globe Rubber Manufacturing Cos., of Trenton. The City of Wilkes-Barre, Pennsylvania, divided its contract for 2,900 feet of hose between The B. F. Goodrich Co., of Akron, the Gutta Percha & Rubber Manufacturing Co., of New York, and the Bi-Lateral Fire Hose Co., of Chicago.

The Xenia Rubber Manufacturing Co., of Xenia, Ohio, reported as having plans under way for the erection of a plant at Dayton, Ohio, has purchased ground and started work on buildings in Xenia, where it has decided to remain. This company, incorporated for the purpose of manufacturing all kinds of rubber goods, with a capital stock of \$40,000 (all common), is already operating in a small way, employing twelve hands. The officers are: J. H. Sanders, president; E. D. Stroup, vice-president; N. Hudson, treasurer, and L. M. Bickett, secretary and general manager.

Review of the Crude Rubber Market.

THE London market for fine Pará displayed an advancing tendency early in the month, a rise being established of 1d., which has so far been practically maintained. The strength of Pará qualities has been attributed to the diminished receipts at the primary markets. Some advices from Brazil, however, speak of lower prices being probable and comment on the obstacles confronting the government in the adjustment of the national finances.

A comparison of the London prices for fine Pará shows: June 25, 2s. 9¾d. (68.41 cents); July 25, 2s. 10¾d. (70.44 cents).

While fine Pará has thus gone up 1d. within a month, plantation rubber has within the same period dropped 1¼d., the decline having been reflected in New York quotations. The exact equivalents in American currency of the London quotations for plantation (basis of first latex) are: June 25, 2s. 3d. (54.73 cents); July 25, 2s. 1¾d. (52.20 cents).

Much attention has been directed on both sides of the water to the willingness of estate owners to sell their 1915 product at relatively low prices, to ensure its finding a market. Thus plantation rubber has been offered at 51½ cents for delivery first half of 1915, while any price under 50 cents would eliminate any profit. Spot rubber has been quoted at notably higher prices, first latex for August delivery standing at 55½ cents.

The London auction of July 7 included about 1,100 tons of plantation rubber, which met with fair competition, while the prices realized on the first day showed a reduction from those of previous sale. On the second day, however, a recovery took place which favorably affected the contract market. Cable advices of the auction of July 21, comprising 1,000 tons, report a gradual improvement during the sale, which closed higher than it started.

At the Antwerp sale of June 23 there were offered 259 tons Congos and 208 tons plantation rubber. Of the former 147 tons were sold, and of the latter 185 tons. The average fall was about 5½ per cent. Considering the inactive state of the principal markets, this result was thought relatively satisfactory. Stock in Antwerp at the end of June was 345 tons, as compared with 1,085 tons on June 30, 1913. For the sale of July 23, 45 tons Congos and 146 tons plantation rubber were announced.

The 111 tons (mostly plantation) offered at Amsterdam June 26 were chiefly sold below recent valuations. The next sale (fixed for July 29) will include 156 tons *Hevea*, and 11 tons *Ficus*.

In the Rotterdam sale of July 3, 240 tons *Hevea* and 130 tons Congos, etc., were included. The *Heveas* were sold and the Congos bought in.

Failing any notable demand for consumption, the Hamburg market has been quiet.

NEW YORK QUOTATIONS

Following are the quotations at New York one year ago, one month ago, and July 31, the current date:

PARA.	Aug. 1, '13.	July 1, '14.	July 31, '14.
Islands, fine, new.....	74@	58@59	57@59
Islands, fine, old.....		59@60	58@62
Upriver, fine, new.....	85@86	68 1/2 @ 69	72 @ 73 1/2
Upriver, fine, old.....	92@93	69 @ 70	72@75
Islands, coarse, new.....	30@31	28@29	27@29
Islands, coarse, old.....			
Upriver, coarse, new.....	51@52	39 1/2 @ 41	39 1/2 @ 42
Upriver, coarse, old.....	39@40		
Cameta	37 @ 38	31 @ 32 1/2	30 1/2 @ 31 1/2
Caucho, upper	51@52	39 @ 40	38@41
Caucho, lower		36@37	35@37

PLANTATION CEYLON.

Fine smoked sheet.....	70@71	57@63	56@59
Fine pale crepe.. { near-by } { forward }	68@69	56@ 57 55 1/2 @ 56 1/2	53@56 52@53
Fine sheets and biscuits un-smoked		56@57 1/2	54@56

CENTRALS.

Corinto		41@42	39@42
Esmeralda, sausage	52@	39@40	38@41
Guayaquil, strip			
Nicaragua, scrap	52@	38@40	35@40
Panama			
Mexican plantation, sheet....		42@48	40@47
Mexican, scrap	52@	38@40	36@41
Mexican, slab	35@		25@35
Mangabeira, sheet			
Guayule		25@35	25@35
Balata, sheet	70@72	45@ 48	45@58
Balata, block	51@ 53		48@53

AFRICAN.

Lopori, ball, prime.....	62@	45@52	45@ 53
Lopori, strip, prime.....	60@		
Aruwimi	55@57	35@ 40	38@47
Upper Congo, ball red.....	55@56	38@42	
Ikelemba	57@58	35@ 45	38@45
Sierra Leone, 1st quality....	55@58	35@40	35@47
Massai, red	62@63	48@ 50	40@50
Soudan Niggers	50@ 55	38@40	36@46
Cameroon, ball	40@ 49	25@ 35	25@35
Benguela		27@32	25@31 1/2
Madagascar, pinky	55@60		
Accra, flake	24@25	22 1/2 @ 23	22 @ 22 1/2

EAST INDIAN.

Assam	35@70		35@55
Pontianak	63 8/9 @ 65 8/9		57 8/9 @ 6 1/2
Borneo III	32@30		20@25
Borneo II	45@48		27@29
Borneo II	55@60		45@

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows:

"During the first half of July the market for commercial paper remained practically the same as for the past three months. The demand being good and rates easy, but the latter part of the month the demand fell off somewhat and rates advanced a little, the best rubber names ruling at 4½@5 per cent., and those not so well known 5¼@6 per cent.

NEW YORK PRICES FOR JUNE (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine.....	\$0.69@0.71	\$0.87@0.92	\$1.08@1.12
Upriver, coarse .....	.40@ .42	.54@ .62	.86@ .91
Islands, fine .....	.58@ .62	.82@ .85	1.01@1.06
Islands, coarse .....	.27@ .29	.33@ .39	.55@ .59
Cameta .....	.31@ .34	.40@ .43	.63@ .65

Rubber Scrap Prices.

LAKE NEW YORK QUOTATIONS. Prices in cents per pound on carload lots, per pound

	July 31, '14.
Old rubber boots and shoes (mostly)	
Old rubber boots and shoes (foreign)	
Pneumatic bicycle tires.....	3 3/4 @ 4
Automobile tires.....	4 @ 4
Solid rubber wagon and carriage tires.....	5 @
White trimmed rubber.....	10 @
Heavy black rubber.....	3 3/4 @ 4
Air brake hose.....	3 1/8 @
Garden hose.....	1 @ 1
Fire and large hose.....	2 @ 2 1/8
Matting.....	
No. 1 white auto tires.....	5 1/2 @
Foreign auto tires.....	4 @ 4

Amsterdam.

JOOSTEN & JANSSEN report [July 10]:

At the recent sale a marked demand was noticeable for *Hevea*. The average result was a reduction on valuations of 7 per cent. for *Hevea* and of 1 1/2 per cent. for *Para*.

Rotterdam.

HAVELAAR & DE VRIES Report [July 7]:

Prices at sale of 3rd instant were below valuations. While the holders of *Hevea* met the market, the owners of *Congo* withdrew their offerings.

Plantation Rubber from the Far East.**EXPORTS OF CEYLON GROWN RUBBER**

(From January 1 to June 22, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.)

	1913.	1914.
To Great Britain.....pounds	5,002,102	7,235,552
To United States.....	2,936,581	4,311,149
To Belgium.....	1,383,294	2,315,192
To Australia.....	272,305	162,885
To Germany.....	111,009	849,187
To Japan.....	99,611	177,606
To Italy.....	33,802	312
To Austria.....	26,075	
To Straits Settlements.....	9,482	37,249
To Holland.....	992	
To India.....	209	500
To France.....		144,043
To Russia.....		98,482
Total.....	9,875,462	15,332,157

(Same period 1912, 5,044,285; same period 1911, 2,270,565.)

The export figures of rubber given in the above table include the imports re-exported. These amount to 1,813,360 pounds—1,515,894 pounds from the Straits and 285,842 pounds from India. To arrive at the approximate quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported to Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, May 31.	Malacca, May 31.	Penang, May 31.	Port Swet- tenham, June 9.	Total.
Great Britain.....pounds	9,141,637	2,100,933	7,403,600	10,711,911	29,358,081
Continent.....	1,188,366	5,750	328,933	1,335,624	2,858,673
Japan.....	46,418				462,418
Ceylon.....	153,917		467,867	760,340	1,382,124
United States.....	4,221,438		414,133	135,590	4,772,161
Australia.....	27,883				27,883
Total, 1914.....	15,195,659	2,106,683	8,614,533	12,944,465	38,861,340
Total, 1913.....	9,564,856		5,863,467	12,290,146	27,718,469
Total, 1912.....	5,014,131		3,211,759	9,135,496	17,361,386
Total, 1911.....	2,192,751		1,764,641	5,994,795	9,952,187

Antwerp.

	RUBBER ST.	1914.	1913.	1912.	1911.	1910.
DETAILS.						
Stocks, May 1.....kilos	356,185	1,053,993	444,437	614,010	543,863	
.....		332,365	174,315	382,972	356,288	
.....		26,520	10,529	11,860	29,384	
.....		143,820	97,942	32,160	39,929	
Sales in June.....	344,506	1,556,698	727,223	1,041,002	600,464	
.....		471,555	384,032	267,025	508,947	
Stocks, June 30.....	430,877	1,085,143	343,191	773,977	460,517	
Arrivals since Jan. 1—						
.....		1,651,140	1,417,416	1,642,593	1,655,626	
.....		73,041	69,166	246,953	167,522	
.....		1,011,929	612,634	331,476	262,060	
.....		2,736,110	2,099,216	2,221,022	2,085,208	
Sales since January 1.....	2,876,525	2,162,027	2,430,563	2,035,257	2,166,203	

RUBBER ARRIVALS FROM THE CONGO.

JUNE 16.—By the steamer *Elisabethville*:

Bunge & Co.....(Comp. Commerciale Congolaise) kilos	20,000
.....	860
.....	3,100
.....	4,600
Société Coloniale Anversoise.....(Kasai)	36,000
.....	2,250
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	21,000
.....	6,000
W. Mallinckrodt & Co.....(Alimaïenne)	4,500
Comp. Colonial Franco-belge (Charles Dethier)	6,800
.....	41,450
do.....(Cie forestière Sangha-Cubanghi)	19,400
Arthur Henrion.....	160
Total.....	166,520

JULY 7.—By the steamer *Anversville*:

Bunge & Co.....(Belgika) kilos	1,800
do.....(Alberta)	700
do.....(Forminiere)	4,400
do.....(Comfina)	8,300
do.....(Congo Congo belge)	1,400
Société Coloniale Anversoise.....(Intertropical)	12,700
do.....(Lomami)	6,680
do.....(H. C.)	12,200
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	46,500
do.....(Creveldt)	2,700
Comptoir Colonial franco-belge (Charles Dethier)	11,850
do.....(Cie forestière Sangha-Oubanghi)	10,770
do.....(Communiere)	3,375
do.....(American Congo Cy)	123,375

IMPORTS FROM PARA AT NEW YORK.

[The Figures in Italic Weight in Pounds.]

JUNE 12.—By the steamer *Hubert*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	133,100	4,600	99,300	10,700=	247,700
General Rubber Co.....	30,000	6,700	55,500	15,400=	107,600
Meyer & Brown.....	7,200		9,200	77,400=	93,800
Hagemeyer & Brunn.....	12,100	2,900	27,800	600=	43,400
H. A. Astlett & Co.....	21,800	18,500	29,800	40,000=	110,100
Henderson & Korn.....	50,000	4,300	81,000	97,300=	232,600
W. R. Grace & Co.....	5,700		10,600		16,300
American Express Co.....	22,200				22,200
F. Rosenstern & Co.....	1,400		4,200	300=	5,900
G. Amsinck & Co.....	3,800		3,500	2,100=	9,400
Robinson & Co.....	60,100	15,500	33,700	16,400=	125,700
Total.....	347,400	52,500	354,600	260,200=	1,014,700

JULY 1.—By the steamer *Denis*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	83,300	17,700	137,700	60,900=	299,600
General Rubber Co.....	78,200	31,300	43,300	3,500=	156,300
Meyer & Brown.....	3,900	2,500	91,900	56,500=	154,800
Hagemeyer & Brunn.....	16,100	2,900	38,300	6,400=	63,700
H. A. Astlett & Co.....	33,100	13,100	38,400	17,300=	101,900
Henderson & Korn.....	59,300	19,700	8,700	900=	88,600
Robinson & Co.....	52,400	11,800	14,200	4,400=	82,800
Robert Baderhop.....	1,700		11,900		16,200
G. Amsinck & Co.....	3,200	700	700	5,900=	10,500
W. R. Grace & Co.....			4,000		4,000
Total.....	333,800	99,700	389,100	155,800=	978,400

JULY 15.—By the steamer *Boniface*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	53,700	13,200	91,500	40,100=	198,500
General Rubber Co.....	26,300	5,900	10,000	200=	42,400
Meyer & Brown.....	0,000	400	55,900	218,200=	294,500
Henderson & Korn.....	50,700	20,000	72,800		143,500
H. A. Astlett & Co.....	8,600	5,000	23,100		36,700
Robert Baderhop.....	20,000		11,200		31,200
G. Amsinck & Co.....	13,700	1,600	3,600	3,500=	22,400
Hagemeyer & Brunn.....		1,100	14,000		15,100
Robinson & Co.....	14,100	7,700			21,800
Total.....	207,100	54,900	282,100	262,000=	806,100

PARA RUBBER VIA EUROPE.

		POUNDS.	
JULY 4.—By the <i>Celtic</i> —Liverpool:			
W. R. Grace & Co. (Fine).....	4,000		
W. R. Grace & Co. (Coarse).....	7,000	11,000	
JUNE 26.—By the <i>Prinz August Wilhelm</i> —Hamburg:			
Raw Products Co. (Coarse).....	11,200		
Various (Fine).....	10,000	1,500	
JUNE 26.—By the <i>Adriatic</i> —Liverpool:			
Raw Products Co. (Coarse).....	9,000		
JUNE 26.—By the <i>Adriatic</i> —Liverpool:			
Johnstone, Whitworth & Co. (Fine).....	4,500		
JUNE 26.—By the <i>Adriatic</i> —Liverpool:			
Raw Products Co. (Fine).....	4,500		
Raw Products Co. (Coarse).....	7,000	11,500	
JULY 6.—By the <i>Matura</i> —Ciudad Bolivar:			
G. Amsinck & Co. (Fine).....	9,500		
G. Amsinck & Co. (Coarse).....	12,000		
Yglesias, Lobo & Co. (Fine).....	11,000		
Yglesias, Lobo & Co. (Coarse).....	3,500		
General Export & Commission Co. (Fine).....	2,500		
General Export & Commission Co. (Coarse).....	15,000		
Schutte, Bunemann & Co. (Fine).....	11,200	84,700	
JULY 6.—By the <i>Adriatic</i> —Liverpool:			
Various (Coarse).....	8,000		
JULY 10.—By the <i>Graf Waldersee</i> —Hamburg:			
Various (Fine).....	13,500		
JULY 11.—By the <i>Cedric</i> —Liverpool:			
Various (Fine).....	4,500		
JULY 15.—By the <i>Kronprinzessin Cecilie</i> —Hamburg:			
Raw Products Co. (Coarse)....	9,000		
Various (Fine).....	25,000	34,000	
JULY 17.—By the <i>Mayaro</i> —Ciudad Bolivar:			
General Export & Commission Co. (Fine).....	30,000		
General Export & Commission Co. (Coarse).....	7,000		
Yglesias, Lobo & Co. (Fine)....	3,000		
Yglesias, Lobo & Co. (Coarse)....	3,000		
G. Amsinck & Co. (Fine).....	1,000	44,000	
JULY 18.—By the <i>Celtic</i> —Liverpool:			
Johnstone, Whitworth & Co. (Fine).....	11,200		
JULY 20.—By the <i>Aquitania</i> —Liverpool:			
Arnold & Zeiss (Fine).....	22,500		
Raw Products Co. (Fine).....	11,200	33,700	
JULY 21.—By the <i>Finland</i> —Antwerp:			
Various (Fine).....	22,500		

OTHER NEW YORK ARRIVALS.

CENTRALS.		POUNDS.
JUNE 22. By the <i>Virginia</i> =Colon:		
G. Amsinck & Co.....	2,500	
A. Held	10,000	
Pottberg, Ebeling & Co.....	300	12,800
JUNE 24. By the <i>Prinz Stg.</i> =Colon:		
Fidanque Bros. & Co.....	1,000	
G. Amsinck & Co.....	200	1,200
JUNE 24.—By the <i>Tintoretto</i> =Bahia:		
Adolph Hirsch & Co.....	16,500	
Various	600	17,100
JUNE 26. By the <i>Adriatic</i> =Colon:		
G. Amsinck & Co.....	3,200	
Lanman & Kemp.....	1,800	
Pablo Calvet & Co.....	900	
Various	5,000	7,900
JUNE 26.—By the <i>Guantanamo</i> =Mexico:		
E. Steiger & Co.....	16,000	
Harburger & Stack.....	8,000	
G. Amsinck & Co.....	600	
Wessels, Kulenkampf & Co.....	5,000	
Graham, Hinkley & Co.....	300	
Lawrence Johnson & Co.....	3,000	
Pedro Treman & Co.....	2,000	
J. N. Limbert & Co.....	300	
General Export & Commission Co.....	2,500	37,700
JUNE 29.—By the <i>Allemania</i> =Colombia:		
A. Held	8,000	
JULY 1.—By the <i>Cristobal</i> =Colon:		
Meyer, Hecht & Co.....	1,000	
JULY 1.—By the <i>Orubo</i> =Colon:		
A. M. Capen's Sons.....	700	
JULY 1.—By the <i>Prinz Joachim</i> =Colon:		
Isaac Brandon & Bros.....	1,000	
Harburger & Stack.....	500	1,500

JULY 10.—By the <i>Allianca</i> —Colon:			
G. Amsinck & Co.	5,600		
JULY 12.—By the <i>Prinz August Wilhelm</i> —Colombia:			
G. Amsinck & Co.	4,000		
JULY 13.—By the <i>Albion</i> —Colombia:			
A. Held	4,000		
JULY 15.—By the <i>Colon</i> —Colon:			
G. Amsinck & Co.	3,000		
P. J. Neffs & Co.	4,000	7,000	
JULY 15.—By the <i>Kotonia</i> —Mexico:			
E. Steiger & Co.	6,000		
Harburger & Stack	1,500		
General Export & Commission Co.	100	7,600	
JULY 22.—By the <i>Prinz Stg.</i> —Colon:			
A. M. Capen's Sons	5,500		
H. Wolff & Co.	1,200		
Mecke & Co.	1,200	7,900	
JULY 22.—By the <i>Adriatic</i> —Colon:			
G. Amsinck & Co.	300		
Neuss, Hesslein & Co.	200	500	

AFRICAN.

		POUNDS.	
JUNE 22.—By the <i>Ile of Mull</i> =London:			
Various			27,500
JUNE 25.—By the <i>President Lincoln</i> =Hamburg:			
Rubber & Guayule Agency, Inc.	27,000		
Arnold & Zeiss	11,200		
Ed. Maurer	20,000	58,200	
JUNE 29.—By the <i>Baltic</i> =Liverpool:			
Johnstone, Whitworth & Co.	4,500		
Henderson & Korn	7,000	11,500	
JUNE 29.—By the <i>Florida</i> =Havre			
Various		22,500	
JULY 1.—By the <i>Kroonland</i> =Antwerp:			
Various		13,500	
JULY 2.—By the <i>Kaiserin Auguste Victoria</i> =Hamburg:			
Ed. Maurer	9,500		
Various	5,000	14,500	
JULY 3.—By the <i>Mauretania</i> =Liverpool:			
Arnold & Zeiss		11,200	
JULY 6.—By the <i>Adriatic</i> =Liverpool:			
Johnstone, Whitworth & Co.		4,500	
JULY 7.—By the <i>Finland</i> =Antwerp:			
Various		40,000	
JULY 10.—By the <i>Graf Waldersee</i> =Hamburg:			
Rubber & Guayule Agency, Inc.	27,000		
Various	7,500	34,500	
JULY 11.—By the <i>Cedric</i> =Liverpool:			
Arnold & Zeiss	4,500		
Various	2,000	6,500	
JULY 13.—By the <i>New York</i> =Southampton:			
Various		12,000	
JULY 13.—By the <i>Lapland</i> =Antwerp:			
Various		15,000	
JULY 15.—By the <i>Kronprinzessin Cecilie</i> =Hamburg:			
Ed. Maurer	22,500		
Rubber & Guayule Agency, Inc.	2,000		
Various	3,500	28,000	
JULY 18.—By the <i>Celtic</i> =Liverpool:			
Henderson & Korn		2,500	
JULY 20.—By the <i>Aquitania</i> =Liverpool:			
Arnold & Zeiss		11,200	
JULY 21.—By the <i>Finland</i> =Antwerp:			
Meyer & Brown	11,000		
Various	45,000	56,000	

EAST INDIAN.

[*Denotes plantation rubber.]

		POUNDS.	
JUNE 22.—By the <i>Rotterdam</i> =Amsterdam:			
Meyer & Brown.....	*10,000		
Various	*37,000		*47,000
JUNE 22.—By the <i>Philadelphia</i> =Southampton:			
Rumsey & Greutert.....	*80,000		
Robinson & Co.....	*6,700		
H. Maurer	*16,000		
Raw Products Co.....	*4,000		
Rubber Trading Co.....	*6,700		
Various	*115,000		*228,400
JUNE 23.—By the <i>Minneapolis</i> =London:			
General Rubber Co.....	*235,000		
Ed. Boustead & Co.....	*17,500		
Henderson & Korn.....	*17,500		

Johnstone, Whitworth & Co.	*4,500		
Charles T. Wilson	*100,000		
F. Probst & Co.	*4,500		
Various	*23,500	*402,500	
JUNE 24.—By the <i>Zeeland</i> —Antwerp:			
Meyer & Brown	*90,000		
JUNE 25.—By the <i>St. Louis</i> —Southampton:			
Charles T. Wilson	*16,500		
Earle Bros.	*9,000		
Ed. Maurer	*45,000		
W. Stiles	*6,700		
Arnold & Zeiss	*6,700		
Johnstone, Whitworth & Co.	*12,500		
Rubber Trading Co.	*11,200		
Raw Products Co.	*1,500		
Goodyear Tire & Rubber Co.	*115,000		
Various	*43,300	*270,400	
JUNE 25.—By the <i>President Lincoln</i> —Hamburg:			
Rubber & Guayule Agency, Inc.	*25,000		
Arnold & Zeiss	*4,500		
Henderson & Korn	*4,500		
Ed. Maurer	*15,000	*49,000	
JUNE 26.—By the <i>Argonaut</i> —Singapore:			
Meyer & Brown	*65,000		
Johnstone, Whitworth & Co.	*10,000		
Arnold & Zeiss	*35,000		
The B. F. Goodrich Co.	*90,000		
Ed. Boustead & Co.	*10,000		
Ed. Maurer	*45,000		
Henderson & Korn	*50,000		
L. Littlejohn & Co.	*80,000		
Various	*160,000	*545,000	
JUNE 29.—By the <i>Florida</i> —Havre:			
Michelin Tire Co.	*50,000		
JUNE 29.—By the <i>Minnewaska</i> —London:			
Meyer & Brown	*85,000		
Henderson & Korn	*95,000		
J. H. Rossbach & Bros.	*33,500		
Raw Products Co.	*26,000		
Rubber Trading Co.	*4,500		
Arnold & Zeiss	*6,700		
W. R. Grace & Co.	*4,500		
Rumsey & Greutert	*3,500		
Johnstone, Whitworth & Co.	*2,200		
Ed. Maurer	*11,200		
General Rubber Co.	*300,000		
Charles T. Wilson	*50,000		
Various	*30,000	*652,100	
JULY 1.—By the <i>Kroonland</i> —Antwerp:			
Meyer & Brown	*62,000		
Various	*80,000	*142,000	
JULY 1.—By the <i>Potsdam</i> —Amsterdam:			
Rumsey & Greutert	*2,200		
JULY 2.—By the <i>Birkenfels</i> —Colombo:			
Meyer & Brown	*36,500		
Rubber & Guayule Agency, Inc.	*19,000		
Arnold & Zeiss	*40,000		
Henderson & Korn	*7,500		
H. W. Peabody & Co.	*5,500		
Robinson & Co.	*3,500	*112,000	
JULY 2.—By the <i>Oceanic</i> —Southampton:			
Henderson & Korn	*7,000		
W. R. Grace & Co.	*6,000		
Goodyear Tire & Rubber Co.	*35,000	*48,000	
JULY 2.—By the <i>Kalomo</i> —Colombo:			
Meyer & Brown	*11,200		
Henderson & Korn	*105,000		
W. Stiles	*25,000		
Robinson & Co.	*10,000		
Johnstone, Whitworth & Co.	*50,000		
Various	*75,000	*276,200	
JULY 2.—By the <i>Kaiserin Auguste Victoria</i> —Hamburg:			
Ed. Maurer	*12,500		
Various	*10,000	*22,500	
JULY 6.—By the <i>St. Paul</i> —Southampton:			
Rumsey & Greutert	*16,000		
W. R. Grace & Co.	*2,200		
Earle Bros.	*3,500		
Robinson & Co.	*7,000		
Ed. Maurer	*15,000		
W. Stiles	*5,000		
Henderson & Korn	*33,500		
Arnold & Zeiss	*6,000		
Various	*20,000	*108,200	
JULY 6.—By the <i>Afghan Prince</i> —Singapore:			
Ed. Boustead & Co.	*22,000		
The B. F. Goodrich Co.	*15,000		
Arnold & Zeiss	*36,000		
Henderson & Korn	*56,000		
L. Littlejohn & Co.	*33,500		
Ed. Maurer	*8,500		
Various	*45,000	*216,000	
JULY 6.—By the <i>New Amsterdam</i> —Rotterdam:			
Meyer & Brown	*5,000		
Arnold & Zeiss	*4,500		
Robinson & Co.	*3,500		
Various	*3,500	*16,500	

JULY 7.—By the *Maandag*—London:

Ed. Maurer	*18,000	
Ed. Boustead & Co.	*12,000	
Johnstone, Whitworth & Co.	*14,500	
Henderson & Korn	*105,000	
General Rubber Co.	*100,000	
Charles T. Wilson	*11,200	
W. R. Grace & Co.	*360,7	
Various		

JULY 7.—By the *Vaderland*—Antwerp:

Meyer & Brown	*10,000	
Rubber & Guayule Agency, Inc.	*90,000	*255,000
Various		

JULY 8.—By the *Maandag*—London:

Meyer & Brown	*8,000	
Ed. Maurer	*60,000	
Rubber Trading Co.	*45,000	
Earle Bros.	*60,000	
Charles T. Wilson	*11,200	
Arnold & Zeiss	*50,000	*239,200
Various		

JULY 10.—By the *Graf Waldersee*—Hamburg:

Hecht & Co.	*27,000	
Various	*47,000	

JULY 13.—By the *New York*—Southampton:

Rubber Trading Co.	*13,500	
Ed. Maurer	*5,000	
Earle Bros.	*1,200	
Various	*22,500	*42,200

JULY 13.—By the *Maandag*—London:

Meyer & Brown	*61,000	
Arnold & Zeiss	*40,000	
Henderson & Korn	*65,000	
Johnstone, Whitworth & Co.	*50,000	
Various	*100,000	*316,000

Meyer & Brown	*40,000	
Various	*75,000	*115,000

General Rubber Co.	*230,000	
Charles T. Wilson	*30,000	
Henderson & Korn	*6,000	
W. R. Grace & Co.	*6,000	
Various	*2,000	*274,000

JULY 15.—By the *Kronprinzessin Cecile*—Hamburg:

Henderson & Korn	*2,200	
Rubber & Guayule Agency, Inc.	*3,500	

JULY 16.—By the *Philadelphia*—Southampton:

Various	*40,000	
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Meyer & Brown	*13,000	
Various	*40,000	*53,000

JULY 21.—By the *Guatemala*—Havre:

Michelin Tire Co.	*50,000	
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Meyer & Brown	*60,000	
Manhattan Rubber Mfg. Co.	*8,000	
Robinson & Co.	*3,500	
Arnold & Zeiss	*4,500	
Various	*30,000	*106,000

JULY 21.—By the *Minneapolis*—London:

General Rubber Co.	*35,000	
W. R. Grace & Co.	*22,500	
Charles T. Wilson		

Johnstone, Whitworth & Co.	*2,000	
Ed. Maurer	*20,000	
Robert Badenhop	*9,000	
Robinson & Co.	*16,000	
Goodyear Tire & Rubber Co.	*160,000	
Various	*50,000	*340,700

Meyer & Brown	*23,500	
Rubber & Guayule Agency, Inc.	*10,000	
Henderson & Korn	*17,000	
Robinson & Co.	*17,000	
Johnstone, Whitworth & Co.	*4,500	

CUSTOM HOUSE STATISTICS.

Imports:	Pounds.	Value.
India rubber	9,382,713	\$4,869,930
Balata	106,295	61,432
Gutta jelutong (Pontianak)	1,389,611	59,910
Total	11,008,966	\$5,016,185
India rubber	68,274	39,092
Guayule	2,250	1,058
Rubber scrap, imported	484,195	\$6,267
Rubber scrap, exported	484,195	\$9,719

BOSTON ARRIVALS.

Imports in June, 1914.	Pounds.	Value.
Gutta jelutong	60,000	\$2,181
Gutta percha	45,705	9,845
India rubber	35,587	17,001

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA AND MANAOS FOR THE FIRST HALF YEAR OF 1914. (IN KILOGRAMS.)

EXPORTERS—	NEW YORK.					EUROPE.					Stock in Pará on 30th June, 1914.		GRAND TOTAL.
	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Total exported.		
Zarges, Berringer & Co.													
Para													
Zarges, Ohliger & Co.—	1,298,289	286,114	1,004,926	789,053	3,378,382	2,373,298	370,897	331,162	1,284,197	4,359,554	7,737,936	110,000	7,847,936
Manaos													
General Rubber Co. of Brazil—													
Para & Manaos	806,970	180,998	540,532	746,962	2,275,462	628,028	134,815	65,945	566,421	1,395,209	3,670,671	38,000	3,708,671
Pralow & Co.—Manaos	728,559	174,066	260,315	219,898	1,382,838	761,706	120,359	246,882	403,204	1,532,151	2,914,989		2,914,989
J. Marques—Para	473,656	139,889	729,405	671,835	2,614,785	609,812	17,875	23,960	150,037	801,684	2,876,469	90,000	2,906,469
Suarez Hermanos & Co., Ltd.—Para	83,798	4,307	15,676	64,713	168,494	632,282		74,367	589,197	1,295,846	1,464,340		1,464,340
Pires Teixeira & Co.—Para	100,518	23,969	416,147	87,795	628,429	191,561		7,920		199,481	827,910	25,000	852,910
De Lagotellerie & Co.—													
Para & Manaos	60,849	8,250	26,749	70,553	166,401	264,558	52,292	59,193	40,484	416,527	582,928		582,928
Seligmann & Co.—Para	46,431		10,993	137,905	195,329	244,847		39,627	28,982	313,456	508,785	80,000	588,785
G. Definer & Co.—Manaos	12,165	3,731	5,565	3,201	24,662	76,951	4,749	14,287	1,333	97,320	121,982		121,982
J. G. Araujo—Manaos													
Adelbert H. Alden, Ltd.—													
Para & Manaos						20,400	3,415	6,029	6,336	36,180	36,180	30,000	66,180
W. Peters & Co.—Manaos						1,100		3,265	530	4,895	4,895		4,895
Armazens Andresen—Manaos								1,210		1,210	1,210		1,210
Sundry exporters	89,521	12,147	37,509	35,233	174,408	365,025	42,376	91,537	170,987	669,925	844,333		844,333
From Itacoatiara, direct	3,700,756	833,471	3,047,817	2,827,146	10,409,190	6,169,568	746,778	965,384	3,241,708	11,123,438	21,532,628	373,000	21,905,628
From Iquitos, direct	7,520	920	3,120	6,000	17,560	36,328	4,564	24,333	22,146	87,371	104,931		104,931
Stock in first hands in Para	59,206	4,091	17,130	200,725	281,152	185,051	11,152	50,126	302,869	549,198	830,350		830,350
From Iquitos and Manaos on board S.S. "Atahualpa"												353,000	353,000
From Manaos on board S.S. "Boniface"												59,000	59,000
Stock held by Syndicate J. Marques												800,000	800,000
Total	3,767,482	838,482	3,068,067	3,033,871	10,707,902	6,390,947	762,494	1,039,843	3,566,723	11,760,007	22,467,909	2,035,000	24,502,909

EXPORTS.

	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
To Europe	16,061,547	14,334,668	18,656,543	18,575,451	19,278,263	20,523,909	19,805,223	22,979,328	19,757,718	21,994,900	22,114,618
To United States	15,033,395	16,309,468	15,260,345	16,192,304	16,587,321	17,539,442	19,646,980	15,060,490	16,100,881	21,367,493	17,101,115
Total kilos	31,094,942	30,644,136	33,916,888	34,767,755	35,865,584	38,063,351	39,452,203	38,039,818	35,858,599	43,362,393	39,215,733

ENTRIES.

	1903-1904	1904-1905	1905-1906	1906-1907	1907-1908	1908-1909	1909-1910	1910-1911	1911-1912	1912-1913	1913-1914
July	1,280	1,250	1,450	1,840	1,370	1,300	1,400	2,340	1,410	1,940	2,120
August	1,230	1,260	1,300	1,690	1,500	1,890	1,870	1,870	1,590	1,900	1,600
September	2,010	1,780	2,200	2,070	2,410	2,355	2,020	1,980	2,630	2,620	2,880
October	2,440	2,820	3,580	3,030	3,200	3,460	3,275	3,170	2,990	3,920	3,740
November	2,980	2,800	2,890	3,480	3,200	3,430	4,640	3,790	3,550	3,715	2,550
December	3,530	3,390	3,270	2,610	2,560	3,300	3,510	2,640	3,830	4,920	3,590
January	4,360	4,590	5,710	3,780	4,860	5,480	5,490	4,130	4,860	5,140	4,420
February	3,680	4,320	3,920	5,060	5,340	5,040	4,760	5,795	4,850	4,990	4,610
March	3,940	5,000	3,700	5,830	4,240	4,140	5,210	3,540	4,400	4,265	4,850
April	2,070	2,120	2,500	4,490	3,100	3,760	3,600	3,490	3,270	3,540	3,830
May	1,560	2,260	2,320	2,625	3,210	2,340	2,170	3,060	3,410	2,880	2,890
June	1,500	1,470	1,650	1,500	1,660	1,570	1,220	1,725	2,570	2,105	2,050
Total, tons	30,580	33,060	34,490	38,005	36,650	38,065	39,165	37,530	39,360	41,935	39,130



RUBBER IN BURMA.

Vol. 50.

August 1, 1914

No. 5.

TABLE OF CONTENTS.

Editorials:	Page.
No Psychology in the Auto. Trade.....	581
A Minor But Vastly Popular Rubber Sort.....	581
When the Rubber Trade Genuinely Mixes.....	582
Colombia Ought to Throw in Her Rubber Trade.....	583
"One of the Five Largest Producers".....	583
North American Banks in South America.....	583
The Fourth International Rubber and Allied Industries Exhibition	584
Britain's Tropical Gardens and What They Have Done....	591
Cowboy's "Chaps" Now Being Made of Rubber.....	593
The Rubber Club's Annual Midsummer Outing.....	594
The Production of Sulphur	597
India Rubber Goods in Commerce.....	599
What the Rubber Chemists Are Doing.....	600
Interesting Letters from Our Readers.....	601
The Rubber Trade in Akron	602
The Rubber Trade in Boston.....	603
The Rubber Trade in Chicago	604
The Rubber Trade in Rhode Island.....	604
The Rubber Trade in Trenton	605
The Rubber Trade on the Pacific Coast.....	606
Lieut. Col. Arthur F. Townsend	606
New Rubber Goods in the Market	607
News of the American Rubber Trade.....	609
New Machines and Appliances	615
The Editor's Book Table	618
New Trade Publications.....	620
The "Duplex" Collapsible Core	621
The India Rubber Trade in Great Britain.....	622
Rubber Notes from Japan	624
The Batavia Rubber Exhibition	625
Notes from British Guiana.....	626
Notes from Para	627
Recent Patents Relating to Rubber	628
[United States Great Britain France Germany Belgium]	
Review of the Crude Rubber Market.....	632
Rubber in Burma	636

An additional cable is to be laid during the summer between New York and Colon on the Isthmus of Panama. The laying of this cable, the necessity for which has been brought about by the increased use of the lines to Central and South America, will probably be completed by the first of December. The cable is being made in England for the Central & South American Telegraph Co., and its cost will be about \$1,500,000. The cable steamship *Colonia* on November 1 will leave England for New York. It will begin laying it off Coney Island, proceeding southward at the rate of seven knots an hour.

A LATE report from Consul Maxwell K. Moorhead, stationed at Rangoon, India, contains some interesting information regarding the production of plantation rubber in Burma, of which the principal features are given below:

Hevea rubber was first introduced into Burma in 1877, when a small consignment of plants was sent from Kew Gardens to Mergui. A second consignment was obtained from Ceylon in 1879. This was the beginning of the Government experimental garden, the results obtained from which proved conclusively that *Hevea* rubber could be grown in Burma. In 1910 the Government sold the experimental garden to the Mergui Crown Rubber Estates. There is on this estate a 50-acre block of 35-year-old rubber trees. Girths of 70 to 80 inches are common, the largest tree measuring 108 inches, and their average yield is 12 to 15 pounds per tree.

The chief planting centers are Mergui with King Island 18 miles distant, and Victoria Point lying 220 miles south of Mergui, distant two days by steamer and forming the frontier between Burma and Siam. Weekly steamers ply between Rangoon and Mergui, taking two days for the trip. Other important districts where rubber has been planted are in Amherst district, near Moulmein; at Twante, near Rangoon; at Hlawga, 15 miles from Rangoon; at Shwegyin, Toungoo district, and in the far north close to the Chinese border, at Myitkyina.

The climate of the rubber-producing areas of Burma may be divided into four seasons, viz., the dry season, December 1 to March 31, in which practically no rain falls; the rainy season, June 1 to September 30, during which 90 per cent. of the total precipitation of the year occurs, 62 to 147 inches; the preliminary rainy season, April 1 to May 31, when 9 to 24 inches fall; and the declining rainy season, October 1 to November 30, 9 to 12 inches. In the year from April 1, 1912, to March 31, 1913, the rainfall varied in the several districts mentioned from 85.12 to 182.63 inches and from 113 to 143 days.

While the rainfall is not as evenly distributed throughout the year as in the Federated Malay States, there is no season of prolonged drought, the dry season consisting of only four months. There are also heavy dews throughout the dry months. The mean daily temperature on the rubber plantations for the year is 80 degrees F.

The present area planted in *Hevea* rubber is 29,404 acres, and the total production for 1913 is thought to have been 650,000 pounds, as against 510,000 pounds in 1912. The commissioner of settlements and land records estimates that the area planted under rubber up to the end of 1913 should be 34,544 acres, and that the future new plantings and total production will approximate: In 1914—3,666 acres, production, 1,000,000 pounds; 1915—5,278 acres, production, 1,500,000 pounds; 1916—6,660 acres, production, 1,800,000 pounds; 1917—11,047 acres, production, 3,000,000 pounds.

The exports of raw rubber, including wild rubber, from Burma during the fiscal years ending March 31, 1913 and 1914, were 526,176 pounds and 765,408 pounds, respectively.

The authorized capital of the rubber companies in Burma is \$4,063,690, of which \$2,804,070 has been issued.

The laborers on the rubber estates are mainly Indian coolies, although Burmese are employed on some plantations. The average daily rate of pay is 16 cents for weeders, 18 cents for tappers, whose task consists of 250 trees, tapped on the third system, varying from one cut to three cuts per tree, according to size.

Most of the rubber produced in Burma is converted on the estate into smoked sheet and pale crêpe of various qualities. Recently Burma pale crêpe brought the top price on the London market.

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SEPTEMBER 1, 1914.

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TABLE OF CONTENTS ON LAST PAGE OF READING.**THE WAR AND THE RUBBER TRADE IN THE UNITED STATES.**

FEW industries are less directly connected with the scene of the great conflict now in progress in Europe than the rubber trade in the United States, and yet none has been more quickly or more widely affected. As an illustration of which fact the extraordinary performance of the crude rubber market in the early part of August might be cited. On the first day of August Upriver fine sold at seventy cents. On the seventh day of August it sold at a dollar and twenty cents—an increase in six days of seventy-one per cent. On the same two dates plantation first latex sold at fifty-five cents and a dollar and fifteen cents—an advance in less than a week of one hundred and ten per cent. The rubber market has seen many fluctuations but at no time hitherto has there been any such rapid advance.

The crude rubber market was temporarily almost in a condition of panic and the feeling quickly communicated itself to the manufacturers, a number of whom, seeing the price of their necessary supplies going up with such unprecedented rapidity, announced a material advance in the price of manufactured goods. This was particularly true of the tire market.

The reasoning of the rubber men, both importers and manufacturers, was as follows: With only two or possibly three months' supplies of rubber at the factories; with not more than three or four hundred tons in the hands of importers; with the sea swept clean of commerce; with the channels of receiving rubber effectually stopped and all the avenues of accustomed exchange closed and barred; with contracts to be filled and scant material to fill them with, of what avail was it that the accustomed supply of Amazon rubber was on the docks at Para ready for shipment and an ever increasing supply of plantation rubber waiting at Singapore to embark for American markets? In the state of the trade's mind at that time these southern and eastern supplies might as well have been in the moon. The situation looked desperate.

But after two weeks the feeling of alarm generally subsided. It was discovered that all commerce was not to be driven from the seas and that, barring German boats, the bottoms of other nations, and particularly of all neutral nations, would soon be able to ply their accustomed course. Congress rushed in at once to remove the restrictions that had for years so greatly fettered our merchant marine, and some shipping lines, including those to South America, promised an immediate addition to their number of ships; so that communication with Para appeared likely soon to resume its normal condition and, with the overwhelming advantage of the Allies on the seas, the likelihood of open water from Singapore to Liverpool and New York seemed, if not imminent, at least a probability of the early future.

In addition, it became more obvious with each day of fighting that it would be a long time before the European market could use more than a fraction of the rubber that had hitherto been delivered at its factories—which would mean all the greater supply for the manufacturers of the United States.

When these saner aspects of the situation began to appear prices receded, until during the latter part of August the quotations, both for Para and eastern rubber, had lost over two-thirds of their meteoric rise during the first week of the month. Many manufacturers also concluded that it would be unnecessary for them, at present at least, to demand an advance in their prices, and where their goods had been marked up during the first week of the month in several cases they were marked back again during the third week.

It cannot be said that the present situation is normal, for it is far from it; but it is sane and reasonable. The aspect of panic has been entirely eliminated.

Fortunately, while the United States is absolutely dependent for its crude rubber supplies on foreign parts, in the matter of various compounding ingredients it is to a great extent independent. Some years ago our sulphur came from Italy and Sicily, but for a number of years past we have more than supplied our home needs; and this is also true, in large part, of zinc oxide and lithopone. We also produce more lead compounds than we consume, and while most of our magnesia has hitherto come from the Balkans, we have ample deposits on the Pacific coast which will be available if necessary. Taking all the ingredients used in rubber manufacture, we are dependent to a comparatively slight extent on foreign fields.

It is given to no man to read the future with absolute accuracy, but according to the best conjectures that we can now make—based upon present conditions—the rubber industry of this country need not be particularly apprehensive. To be sure, rubber stocks are low, for there has been a general feeling through the trade for the past year—based on the ever increasing supplies from the East—that the price of crude rubber would gradually go lower; and of course the immediate new supply of crude will be very small. In August, 1913, importations of rubber into the United States amounted to 8,679,222 pounds and, including all kinds—jelutong, balata, etc.—the importations amounted to 11,064,392 pounds; that being just a trifle over the average for the last six months of 1913. During the first twenty-six days of August just past our importations of rubber amounted to only 4,985,500 pounds, and according to the best advices the amount now afloat on its way to New York is still smaller.

But with the clearing of the waters of hostile ships and the great increase in bottoms flying the American flag, the rubber accumulating in South America and in the East will undoubtedly be on its way to these ports before our supplies have been exhausted. For it must be kept in mind that home consumption of rubber manufactured goods is likely in the immediate few weeks to show a falling off. This is particularly true of anything in the way of luxuries. The great conflict, with its terrific destruction of property and with its awful human carnage, cannot but have a sobering effect upon the people of the United States, and they are likely—for the time being, at least—to revert somewhat to the simple life. We cannot expect immediately to increase our exports to Europe, as tires, shoes and clothing are contraband of war. But, passing over the next few weeks, the general effect for the future must be a great increase

in the output of our rubber factories. Last year our entire sales of manufactured rubber goods in the European market amounted to \$5,201,914, and in South America our total sale of manufactured rubber goods reached only \$765,709. Certainly with the inability of Europe for a long time to come to meet its own requirements, and much less to supply those of the foreign trade, our exports of rubber manufactures both to Europe and to the South American continent should increase many hundred per cent.

The rubber trade of the United States should under present circumstances adopt the motto of the Administration, with a single but important change. They should not embark on a period of "watchful waiting," but rather on a period of watchful working, using much caution in their immediate transactions but making all possible preparation for the widening market that is bound to come when the war shall be brought to a close.

THE OPENING DOOR OF SOUTH AMERICAN TRADE.

FOR the past three weeks the daily press—incited to a certain extent by a strong appeal made by Mr. John Barrett, the energetic Director General of the Pan American Union—has been calling on all American manufacturers to seize upon the great prize of South American trade which has been divided for so many years among the various nations of Europe but which now perforce they are in large part compelled to neglect.

This is no new topic for the columns of THE INDIA RUBBER WORLD. Much has appeared in its pages during the last three years on the great desirability of increasing our trade with the southern continent. But those enterprising manufacturers who have knocked at that door have not received a very cordial response. This of course has been largely owing to the fact that behind the door were the English and the Germans, who, as far as they could, kept it closed against all new comers. But now that the English and the Germans have come to blows the door is opening and of necessity will open still wider, for on the South American continent there are sixty million people who hitherto have been largely dependent for their manufactured goods on the factories of Europe, and now that many of these are closed and others working under extreme difficulties, they must look to us for a substantial percentage of their supplies.

The imports of manufactured articles into South America amounted to nearly a billion dollars last year, or, to be more exact, nine hundred and sixty-one millions. Of

the great aggregate importations from Great Britain amounted to two hundred and seventy-three millions and from Germany to one hundred and eighty millions, the two together representing nearly one-half of the South American foreign trade; while the imports from the United States were valued at only one hundred and fifty-five millions, or about one-sixth of the whole.

The obstacles hitherto in the way of extending our trade on the continent to the south of us have been many and almost insurmountable. One difficulty was that the balance of trade was always against us, as the South American exports to this country amounted to two hundred and fifty millions a year, while their imports from us were a hundred million less. A second difficulty was the fact that all trade had to be financed through England or the Continent. But under present conditions, of course these obstacles either have been entirely removed or soon will be. The balance of trade will undoubtedly soon prove to be in our favor, and while the purpose of North American banks—as mentioned in our August issue—to establish branch banks in South American cities has not yet been put into effect, it will be in the immediate future, and in the meantime both New York and Boston banks are establishing an exchange of credits with South American bankers, so that direct financing of both imports and exports between the two American continents will soon be possible.

There should certainly be a great increase in our South American market for manufactured rubber goods. During the last two years we have paid South America about sixty million dollars for ninety million pounds of rubber, and in that time we have sent to South America rubber manufactured goods to the value of probably not over a million and a half—a grotesquely inadequate figure. We can hardly expect that the South American market will ever approach the North American market, for the consumption of manufactured rubber goods in the United States amounts to over two dollars per year per capita, but there ought certainly to be a market in South America for rubber goods to the extent of fifty cents a year per capita, and if that could be accomplished and the United States could get a monopoly of it, it would mean an export business of thirty million dollars a year.

One great difficulty hitherto in selling rubber goods in South America, according to salesmen who have been through the experience, was the fact that whenever samples from the United States were submitted our European friends, and particularly the Germans, would offer to produce the same goods at a considerably less price.

Our salesmen have contended that these under-price goods were very much under the quality of the American samples, but as the American goods were effectively kept out of the market the consumer had no means of making a comparison. This obstacle is now removed and American goods have an opportunity of making their superiority known. And if they are superior the consumer will soon discover this fact and be quite unlikely to be tempted in the future to revert to articles of a lower quality because of the offer of a lower price.

At any rate, this great European conflict has given the American manufacturer, without any effort on his part, the opportunity that he has been struggling for so long in vain. The South Americans are bound to give our goods a trial, as for the time being they are compelled to resort to our markets; and if the manufacturers of the United States can adapt themselves to South American conditions, can give their customers as long credits as they have been accustomed to and can supply them with better articles at a price no higher than they have been accustomed to pay, they will not only be able to enter this market but will be able to remain in it permanently.

WAR PRICES WILL START SYNTHESISTS AGAIN.

WITH the price of natural rubber persistently sagging and the apparently well-founded promise of the planters that they would some day supply the market with smoked sheet at a shilling a pound, it is quite natural that the laboratory workers should find their ardor somewhat abated. But conditions during the last few weeks have emphasized a fact which is fairly obvious but likely in normal times to be lost sight of, namely, that it is not enough that the forests of the South and the plantations of the East should be able to produce rubber, but there must in addition be sure and not too expensive means of transportation to the place of manufacture. When the roar of the cannon came thundering out of a clear sky—or if not exactly a clear sky, a sky to all appearances but slightly clouded—driving to shelter all the commerce of the world, the great advantage of producing the raw material in the same country in which it is made into goods became evident at once. If the laboratories could project themselves into the present situation with fifty cent, or even with sixty-five cent rubber, they would not only be able to find a ready market for their products but would lift quite a burden of uncertainty from the minds of the makers of tires and other rubber goods.

THE IMPORTANCE OF THE SOLDIER'S SHOE.

A **N** unusual competition, interesting at any time but under present conditions of exceptional importance, has just come to a close. A little over a year ago the Quartermaster's Department of the United States Army determined if possible to discover the best footwear human ingenuity could devise for the soldier. The officials invited the manufacturers to submit two pairs of shoes each which should be best adapted to army use. Two hundred and forty-two pairs of shoes were entered in the competition.

In the opinion of military experts, the most important article of a soldier's equipment, next to his gun, is his shoes—a fact which it needs no particular argument to prove. The greatest pains were taken to ascertain the proper requirements of a marching shoe. Innumerable X-ray photographs were taken of the anatomy of the foot before, during and after marching, and after months of scientific and most painstaking investigation the award for the best army shoe was made and contracts were given two manufacturers whose shoes offered in competition appeared best to comply with the stipulations. As a result of this thoroughgoing method it is asserted with great confidence by the experts of the Quartermaster's Department that the soldiers of the United States Army will be the best shod in the world.

This matter is of interest to the rubber trade, as rubber footwear will naturally follow the lines prescribed for leather footwear. As a matter of fact, the government on giving a contract either to the manufacturer of leather footwear or the manufacturer of rubber footwear supplies its own lasts, so that whether the footwear is leather or rubber it necessarily follows the lines which the government requires. The contracts for rubber footwear for army use are of course small as compared with those that go to the makers of leather shoes, but still they are large enough to be of interest to the rubber footwear manufacturers. In normal times the standing army requires each year about seventeen thousand pairs of two-buckle Arctics and two or three thousand pairs of boots, mostly of the "Storm King" variety. The navy uses about ten thousand pairs of rubber boots per year and has lately discovered the suitability of the tennis shoe for life on shipboard and orders annually about twenty-five thousand pairs of these very light rubber-soled shoes. In addition to the quantities already mentioned, the marines require about twelve hundred pairs of boots and Arctics during the year. It

will be seen that these are not extremely large figures, but still no rubber footwear manufacturer is disposed to turn a deaf ear to a government contract.

THE POSSIBILITIES OF THE MOTORCYCLE.

THERE has been a tendency to look upon the motor cycle as a plaything, chiefly characterized by the amount of noise it could emit, but it is beginning to be appreciated that this obstreperous vehicle has vast and various possibilities of utility.

To illustrate, the English postal authorities have found after much experimentation that the rural carrier equipped with a motor with side car attachment can deliver two mails where the horse delivers only one, and at one-half the expense. The free rural delivery system of the United States covers over 1,100,000 miles of highway. If in this great system the faithful but plodding horse could be eliminated and the fleet motorcycle take his place, the economy in time, not to mention the saving in provisioning, would make a tremendous aggregate.

The possibilities of the two-wheeled motor in war—discussed theoretically for some time past—is likely before this European upheaval is quieted to be given a very thorough test. A few companies of expert motorcyclists equipped with machine guns and trained in all the arts of modern war could make a swift descent upon the enemy and deal a blow out of all proportion to the number of men involved.

But probably the two-wheeled motor will display its greatest efficiency and utility as an adjunct of the fire departments, especially in smaller places where the maintenance of an extensive equipment would be too burdensome. Practically every fire starts in a small way. The most disastrous conflagrations could have been stopped with small damage if the means had been at hand immediately. The experienced fireman, with axe and chemical extinguisher, could on a motor reach the spot so quickly as often to snuff out the blaze at the very start. It will be remarkable if the motorcycle does not play an important part in the fire equipment of American cities and towns in the near future.

ELBERT HUBBARD SAYS THAT DR. B. F. GOODRICH was the inventor of the pneumatic tire. The editor of this paper knew Dr. Goodrich fairly well, and had from his own lips the story of his life, but no such claim was then made. If there is any truth in the story proofs should be offered, that due credit be given. Otherwise it will be set down as merely another Hubbardesque fancy.

Some Neglected Nearby Markets—III.

GUATEMALA.

PERSONS living in the states of the upper Mississippi Valley and those living within a hundred miles or so of New York may see at any time from May to late September a tiny bird about five inches long from the point of its slender beak to the tip of its tail. It is of a golden yellow for the most part, but its wings are of a grayish blue, which gives it its common or garden name of blue-winged warbler. Its blue wings are undeniable, but its warble is about like that of a house cricket convalescing from a month's illness. Its comparative rarity, its beauty and its great usefulness as an insect destroyer make it a deserved favorite with the nature lover as well as the economist.

During the summer he flits about our gardens and orchards, singing the best that he can, even if not very well, and brings

and when, a year after the event just described, the self-made emperor was chased across the Atlantic, Guatemala was again independent. He came back—not in the sense expressed by modern slang—the next year, but the climate of our hemisphere has never been healthy for emperors and Iturbide died suddenly—in front of a firing squad. Since then, in spite of political disorders and the handicaps produced by three centuries of foreign bondage, Guatemala has advanced in wealth, population and civilization. It has a population of about two million, living on an area slightly greater than that of Louisiana. And it is so near to that state that our little warbler can fly across the intervening waters without stopping for rest or food.

The soil of Guatemala is considered by many as the most fertile of any country on earth. It is basically of volcanic ash and with this is mingled the humus produced by the decay, through countless centuries, of an inexpressibly luxuriant tropical vegetation. With such a soil, with drought and winter unknown, Guatemala possesses almost boundless possibilities of wealth. As the republic lies fifteen degrees north of the equator the sun at midwinter occupies the same place above the Guatemalan horizon that it does in New York about the middle of September. And twice each year, in May and in July, the great



BUENA VISTA STATION, GUATEMALA CENTRAL RAILROAD

up his family; being occasionally married to his cousin, the blue, golden-winged warbler. When the first frosts come he starts southward and goes on until, in October, he has reached the Gulf of Mexico. Here he rests a few days and takes a few good square meals. Then he spreads his blue little wings, launches out over the vast waters of the gulf and is soon out of sight of land with the illimitable sky above, the far horizon on every side and the storm-tossed billows beneath. The sun goes down at the western water's edge and the stars keep watch on the brave little traveler, flying dauntlessly between sea and sky. The sun rises and shows him a palm-lined southern shore, where he may rest and feed and sing the best he knows how.

Is it the voice of cold commercialism we hear, asking what all this has to do with the rubber business? It is; and such questions are not new. But we insist that a lesson may be learned from our little blue-winged warbler. Wherever he spends his summers, in Iowa, Ohio or New York, he is sure to go to Guatemala for the winter. And why? Because there is something there that he wants; so he is going after it, even if he has to fly across the Gulf of Mexico. And the point of the whole matter is that if he can cross the Gulf of Mexico, with only his blue little wings for support and only a few bugs and worms for his reward, why cannot an American cross in a comfortable steamship, to get the dollars that are there waiting for him to come and take them?

Guatemala is the largest of the Central American states and adjoins our afflicted neighbor, Mexico. It was, indeed, politically, a part of that country for a time, but a very short time. In 1822 Iturbide, who called himself Emperor of Mexico, annexed Guatemala, but the annexation lasted only as long as the empire,



TEMPLE OF MINERVA, SCENE OF SCHOLASTIC FESTIVALS, GUATEMALA CITY.

daystar passes directly overhead, shining down chimneys and to the bottoms of wells. But there is no excessive heat, for Guatemala, with nearly all the country at an elevation of four to ten thousand feet and lying between two oceans, enjoys a salubrity of climate approached by few other countries.

Of the people, more than half are pure Indian and only a few thousand are pure white, the remainder being of mixed blood. But this need not worry us. Many of the ablest men in the republics south of us have been wholly or in part of Indian extraction and in the only state of our own country where Indians are numerous—Oklahoma—they furnish a citizenry of which we have no reason to be ashamed. In Guatemala, as elsewhere, the so-called lower classes are coming into their own. That the native stock is not lacking in capacity is proved by the astonishing ruins which are found not only throughout Guatemala but in the neighboring parts of Mexico—ruins of great buildings erected by the ancestors of the meek, brown natives of the present day. These structures, which rivaled those of ancient Egypt and Assyria in massiveness and picturesque detail, were not the work of a people of low capacity. They had a civilization which in time would undoubtedly have worked out

the highest results if they had not fallen under the foot of the ruthless conqueror. The assumption that the present natives are descended from the builders of the temples and pyramids is based upon the fact that from the beginning of history, with the exception of the eastern United States and the West Indies, no important native population has ever been subjected to wholesale extermination or displacement.

To this people, peaceful, prosperous and happy, came white men, bearing the cross of Christianity and the banners of Spain.

They brought whips, chains, firebrands and weapons of



THE NATIONAL THEATER, GUATEMALA CITY.

death. The people succumbed like the sheep between the fangs of the wolf. Their temples were desecrated, their libraries burned, their lands and buildings were stolen, their chiefs and teachers were burned at the stake and they themselves were murdered or, whipped and manacled, set to work as slaves in the fields which but yesterday were their own. Is it surprising that after four hundred years of subjection and repression the descendants of that people feel a trifle discouraged and unenterprising?

But the Indian is no longer a slave and may, if he will, work for himself. He is gradually waking up, but we must be patient and give him time to rub his eyes. An observant traveler says that when anything new is pressed upon the Indian he says that his people have never used it and dismisses the question. When, however, his neighbor adopts a new and improved article or method, his own pride will not let him rest until he has done as well. It is in the judicious cultivation of this trait that the business missionary finds his greatest success. For instance, there is in Guatemala an annual sale of several thousand dollars' worth of mackintoshes, all of which are, or recently were, imported from Great Britain and Germany. Certainly there ought to be a thousand times as many rubber garments sold there and they ought to come from the same nearby land as does the blue-winged warbler. This is the way one visitor describes the rains down there: "The raindrops are about as big as oranges and of a peculiarly wet character; they come down at the rate of about five thousand a minute and hit you everywhere at the same time." That the natives are not sufficiently amphibious to relish this daily meteorological experience is proved by a photograph which the editor of THE INDIA RUBBER WORLD brought back a few years ago from the Mexican state of Chiapas, which adjoins Guatemala. It represented an Indian laborer wearing a native rain-shed of cane fibre, which is the only kind used by the poorer classes in that part of the world. It looks like a corn-shock walking around on two bare feet and surmounted by a volcanic Mexican hat.

The small but steady sale of mackintoshes in Guatemala proves that they are appreciated by their wearers, who, no doubt, are chiefly in the cities. If a salesman thoroughly conversant with the customs and language of the people should go through the

rural districts during the rainy season and should hire persuasive natives to furnish the object lesson and preach the evangel of rubber rain-coats, beyond question a large and permanent trade could be obtained. True, the laborers are poor, but this condition is changing year by year and there could be no investment that would yield proportionately greater comfort.

The entire volume of the commerce between the United States and Guatemala is still comprised within rather small figures. Our imports from that country, of all kinds, for 1912, amounted to \$2,644,037 and in 1913 to \$3,106,981, while our exports of all kinds to that country during these two years amounted to \$2,519,052 and \$3,658,587. Our imports of rubber from Guatemala in 1912 amounted to 166,443 pounds, valued at \$85,936, while in 1913 the number of pounds decreased slightly, being 133,230, but the rubber was evidently a better quality, as its value amounted to \$91,190. Incidentally it might be added that Guatemala levies an export duty on rubber shipped from that country of 1½ cents (American gold) per pound, but the president of the republic issued a decree on May 31 last suspending this export duty for a period of six months, owing to the general fall in the price of rubber.

Our exports of rubber manufactured goods to Guatemala for the last two years are shown in the following table:

	1912	1913
Belting, packing and hose	\$6,179	\$8,694
Shoes—pairs	225	72
value	\$318	\$49
Automobile tires	2,178	2,224
Other tires	871	672
Other rubber goods	2,612	5,393
Total	\$12,158	\$17,032

It will be noticed from this table that our exports of rubber manufactured goods increased in 1913 by about 40 per cent. over the preceding year, but the items are really pitifully small. Think of selling less than \$9,000 worth of belting, packing and hose in a nearby country where there are magnificent forests of mahogany and other cabinet woods which economically cut down and converted into lumber would be a source of vast revenue. And there is the item of rubber shoe exports—72 pairs during the whole year, in a country where there are 2,000,000 pairs of feet. The value of American tires sold in Guatemala, it will be noticed, was less than \$3,000 last year—just about tires enough to supply 15 or 20 machines.

The item "Other Rubber Goods," which includes all that great class of articles known as druggists' sundries, amounted last year to a little over \$5,000; and yet there is one city alone—Guatemala City—with a population close to 100,000 and with a very considerable proportion of this number consisting of well-to-do people who certainly ought to be interested in the ordinary comforts of life. It should be possible to sell there whatever it is possible to sell in New Orleans and Galveston or, excepting a few articles adapted for cold climates, anything that can be sold in any city in the United States. If the figures just given seem small, they furnish at once a proof that the market is there and that its exploitation has just begun. One curious item of trade is that of elastic goring for the "Congress" style of shoes, of which about \$10,000 worth annually is imported into that country. Germany furnishes nearly all of it, the United States figuring, if at all, in a very small way.

The chief port of Guatemala is Puerto Barrios, on the Atlantic Coast, which has more than half of the whole country's foreign trade. On the Pacific side is San José, which handles more than half the remainder, and Champerico, which, in turn, takes more than half of what still remains. Livingston, on the Atlantic and Ocos, on the Pacific, complete the list.

Puerto Barrios has a railroad which runs to Guatemala City in the interior and thence to the Pacific Coast, with the principal towns of which it is connected. The hotels of the republic are said to be very good as to food and fair otherwise, with very

moderate rates ranging from ten to fifty dollars a day—let us hasten to add—in Guatemalan money, which, as the market fluctuates, may be purchased with American gold at the rate of twelve to sixteen Guatemalan for one American.

The indispensable requirements of the salesman are that he must speak the Spanish language and that he have a sympathetic understanding of Spanish-American ideas and customs. He must not attempt to drive things American fashion and, if his customer says "Manana," manana let it be. The merchant or manufac-

turer must, in his turn, fill orders as given and follow packing and shipping regulations to the letter. The purchaser may be presumed to know what he wants and why he wants it, and as he is paying for what he gets, he is entitled to have his wishes respected. In the matter of credits it is also necessary to respect the customs of the country. In respect to nearness the United States has so great an advantage over European competitors that, if our business men fail to reap the benefit, it is their own fault.

The Future of the Rubber Industry On the Upper Amazon.

By Adolfo Ballivian, Consul General from Bolivia to New York.

A CAREFUL study of the interesting reports on the Oriental and Amazonian rival regions made by Mr. C. E. Akers, and of the opinions of authorities such as THE INDIA RUBBER WORLD, of New York, shows conclusively the future possibilities of the rubber industry in the Amazon Valley. We will not, therefore, attempt to analyze the valuable and complete information therein given, but will only refer to those original sources, calling attention to some of their important features. Mr. Akers says in his report:

"In the East the industry was founded from seed taken from Itaituba, on the Tapajós, in 1876, reproducing the white variety (not the best), and yielding an inferior rubber classified as 'weak' (*fraca*) in the markets of Manaus and Para." All the rubber produced in the Orient originated from such inferior seed.

Mr. Akers continues: "In the Amazon Valley the varieties principally utilized are black (*preta*), the best; white (*branca*); red (*Vermelho*); Barriguda (*Hevea spruceana*), and Itapiru (*Hevea guayanensis*). . . . In the East the rubber tree is planted upon many different classes of soil, and with the aid of careful cultivation it thrives in a surprising manner in most localities, with the exception of undrained, swampy lands. Throughout the Amazon Valley the soil is an alluvial deposit on yellow or red clay, and rich in vegetable matter, brought down by the rivers and spread over the land by annual floods. In many districts of the lower Amazon the trees have their roots permanently below the water level, and flourish under such circumstances—in direct contrast to the experience of the Orient.

"In the Orient the rubber trees are carefully and systematically cultivated and all possible assistance extended to foster rapid development. In Brazil the tree is the natural product of the forest, and as yet no effort whatever has been made to aid its growth. . . . In the East the seed is selected with care, planted in specially prepared nurseries, and the young trees transplanted subsequently to land where the conditions afford every possible chance for both branch and root growth."

We ask, what would be the result if the same careful methods should be employed in the Amazon Valley?

"In the East," again Mr. Akers says, "a rubber tree, 75 feet high with a girth of 100 inches at 3 feet from the ground is looked upon as a giant. In the Amazon Valley a tree 130 feet high and 200 inches in girth is not considered anything out of the common. . . . On the River Madeira a little supervision has been attempted, but elsewhere the proprietors have looked on with apathy at the practical destruction of their trees, owing in great part to the fact that the number that could be reached in the forest was so great that a fresh source of supply could be opened up when the existing ones were worthless. . . . Economical methods are unknown on Brazilian rubber property, and in consequence the loss in value in both quality and quantity from the time the latex is extracted from the tree to the date of sale, apart from the loss of weight, is certainly not less than 10 per cent., and often very much greater.

"In the Malay Peninsula a fair basis of price for bringing 1,000 acres of rubber into bearing is £30 (\$150) per acre. In the Amazon Valley the only initial expenditure required is for the construction of houses for the administration and the cost of bringing the collectors to the property, this latter expense being recovered subsequently from the men.

"In the Amazon Valley a marked reduction in the cost of production can be accomplished by improved methods of tapping; increasing production without additional labor, by more systematic administration; by opening up the resources of untouched trees; by cheapening the price of living; by diminution or abolition of export duties, and by the introduction of Chinese (we would suggest Japanese in preference, as they have already gone of their own accord to the Bolivian rubber district with various trades), or European immigration. By such means only it is possible for Brazil to meet successfully the competition of the Orient in the world's markets. That such reduced costs can be brought about I have no doubt whatever, if the measures indicated elsewhere in this report are adopted without undue delay."

If this is such good advice for the Brazilian rubber industry, how much more valuable is it for the Bolivian rubber gatherers and planters! The import and export custom duties are very liberal, and recently the duties on rubber have been considerably reduced, following a scale according to the market price of the article and representing, at the actual price, only a cent and a half per pound of rubber.

The lower Amazon is subjected to longer floods; the rubber trees are more scattered; they do not yield so much, nor is the quality to be compared with that of the up-river regions—as the Acre, Purus, and especially the Abuna River on the Bolivia-Brazilian frontier—whence comes the best rubber known in the world.

It is a well known fact that there has never yet been organized an economical or well-managed plantation such as that recommended by Mr. Akers, either in Brazil or Bolivia, and if some attempts have been made which naturally resulted in failure, they were merely due to defective administration. Those sad experiences can now be turned to advantage in the new organization of plantations, as well as in the exploitation of virgin forests on the up-river estates, especially in Bolivia; adopting the economical methods of the East and employing Japanese laborers, as recently a treaty between Japan and Bolivia has been signed.

Although the original price of land in the Orient, as well as in the Amazon Valley, was very low, it has risen in many cases to enormous figures. In the Orient £95 (\$475) per acre, and in some cases \$1,000 per acre, has been paid for plantations. In Bolivia, in the same way, although the original official price was \$0.16 per acre, the grants have been stopped, and private property has been estimated at \$720 per acre. Owing to the prices caused by the low value of rubber it is possible to acquire valuable estates close to the Madeira-Mamoré Railway and

road to Porto Velho on the Madeira, the starting point of sand railroad, at a price of about \$5 per acre.

We close this article by reproducing an interesting prognostication recently published (in "The World's Work" of February, 1914) by Mr. Henry C. Pearson:

THE FUTURE OF RUBBER

"As to the future, if the ratio of increase in production and planting remains the same, the production of plantation rubber in the next five years should reach 500,000,000 pounds. Such an output would probably mean a drop in price to at least 50 cents a pound. It would also mean a wonderful expansion of the rubber manufacturing industry in new and unguessed lines, as well as in the old. But will Nature allow such areas of one growth to supplant all others? Will not rubber have its boll weevil, its scale, its bud rot? The planters have from the beginning fought white ants, canker, caterpillars; and the entomologists and mycologists of the world are on the alert to defend these new plantations. Will it not happen that these closely planted areas will suffer and perhaps be wiped out as coffee was wiped out of Ceylon? And will it therefore not come about that a wider distribution of planted areas will be necessary—one that will include tropical Central and South America, Africa, and our own Philippines, and thus assure the permanence of this most valuable product?"

In favorable contrast with the Oriental lands, which only produce some tea during the six to ten years required for the maturing of the rubber trees, the Bolivian lands will yield sufficient rubber from the wild trees to cover all expenses and leave a gratifying surplus."

From the "Pan-American Bulletin" of July, we insert the following:

"The British minister to Bolivia (Hon. Cecil Gosling) recently made a report on Bolivian trade and conditions, in which the rubber industry was extensively discussed, and a tribute paid to its excellent qualities. The report deals with the four varieties of rubber trees which abound in Bolivia, the localities where each are found, the condition and price of laborers for gathering the rubber, the export tax—which is likely to be reduced from 12 to 2 per cent. ad valorem—etc. Bolivia stands next to Brazil in amount of rubber production."

SENHOR TERCENCIO PORTA.

Much sympathy has been expressed with the family of Senhor Terencio Porta, an esteemed member of the editorial staff of the Para "Folha do Norte," who died early in June of grip and pleuro-pneumonia. The funeral services were largely attended and the body was followed to the grave by many members of societies to which the deceased belonged. He was 26 years of age, and a native of Pernambuco.

DR. GASPAR VIANNA.

The death at Rio de Janeiro on June 15 of Dr. Gaspar Vianna, the talented young scientist, was a great shock to his many friends in Para, of which city he was a native. Funeral services were held at the cathedral, a meeting of condolence being also held, under the presidency of Dr. Eneas Martins, president of the State of Para, which was attended by a large number of leading Para officials and citizens.

THE BRAZILIAN RUBBER CRISIS.

The Brazilian population, which gave up agriculture for rubber in the halcyon days of the latter, now that the tide has turned, is returning to its old agricultural pursuits. In fact, the woods are losing their denizens, while the towns and villages are getting back their old inhabitants. In particular, the zone of the Bragança railway is displaying the tendency of "going back to the land."

In a recent month 6,502 persons arrived at the port of Para; departures in that time numbered 3,537.

BOUNDARY DISPUTE BETWEEN PARA AND AMAZONAS.

A suit is pending in the Brazilian courts in which the State of Amazonas is protesting against certain acts of usurpation by Para. These acts include the passing of laws by the latter State for execution in the former, thus exercising an unlawful jurisdiction and violating the federal constitution.

COMMERCIAL INVESTMENT ASSOCIATION, PARA.

At the special meeting lately held for the election of officials, Henrique Tancredo Leite was chosen as president, and Floberto Martins as first secretary of the deliberative council; the fiscal and administrative councils being respectively under the presidency of José Pinto Simões and Antonio Mendes Fernandes.

EXPERIMENTAL RUBBER STATION AT MANAOS.

Advice has been received by THE INDIA RUBBER WORLD from the Experimental Station for Rubber Cultivation at Manáos that official permission has been granted by the Federal Government for the director of the experimental rubber station and the chief of the agricultural section to enter upon their duties in accordance with the federal decree of May 14 last.

A BRAZILIAN EXPLOITATION COMPANY SUSPENDS.

The directors of the Brazilian Commercial, Industrial and Rural Co. met in their New York office on August 14 and passed resolutions to the effect that owing to the present conflict in Europe and the financial conditions on the Continent it would be impossible for the company to raise capital at this time for the exploitation of its properties in the State of Pará, Brazil, as it was solely dependent upon its European branches for financial aid, and that in consequence the company after August 22 would suspend all business until further notice.

SENIOR MENDES ON THE AMAZON SITUATION.

At a luncheon given to the delegates to the recent rubber exhibition in London, Senhor J. A. Mendes, delegate of the Commercial Association of Para, spoke on the situation in the Amazon at the present time. He expressed himself as very sanguine that the Amazon country after it emerged from its present trying situation would be on a sounder and more favorable basis than ever before. He continued:

"As regards the severe fall in prices that has affected the Amazonian Valley, those ignorant not only of conditions there but of the enormous capability of recuperation that such a fertile land has think that our days as a rubber-producing center are past. This is not the case. It was natural that in two States like Para and Amazonas, counting only on india rubber as their source of revenue, the financial conditions should be disorganized by the large decrease in the value of this article, still so heavily taxed to face the keen competition from the Far East. Nevertheless, the physical properties of our rubber will always be appreciated by the manufacturing world, and that industry of ours has shown stupendous resistance by coming to the primary markets in large quantities. Everything points to the fact that as soon as the effects of the present crisis are past the prevailing low prices will not only change the obnoxious methods of trading there but will necessarily result in larger crops. As soon as we adapt ourselves to these new conditions—and this is now being done in Amazonas—I do not see how we shall fail to produce rubber cheaply enough to remunerate its extraction."

NO CRIMINAL PROSECUTION OF MEXICAN CRUDE RUBBER CO.

The Mexican Crude Rubber Co., of Detroit, Michigan, whose plant was wrecked on May 15 last by an explosion which killed ten men, is not to be prosecuted criminally, although the coroner's jury rendered a verdict that the explosion was due to "negligence and ignorance on the part of the officials of the Mexican Crude Rubber Co." A careful review of the evidence offered at the inquest showed, however, the impossibility of pinning the matter down to any one of the six different causes out of which the accident might have occurred.

Growing Rubber in Ohio.

OHIO has had such overwhelming success in the production of rubber goods, why should it not also succeed in the production of crude rubber?

Mr. Charles P. Fox, a well-known rubber chemist of that state, is authority for the statement that Ohio can and does produce crude rubber in two different varieties of plants, but unfortunately the percentage of rubber in these Ohio botanical rubber plants is so small as compared with the percentage of profit in the Ohio rubber plants of brick and mortar that there is not likely to be any immediate rush into the occupation of producing crude rubber in that state.

Mr. Fox read two interesting papers at the last two annual meetings of the Ohio Academy of Science. Both of these—the first paper entitled "Ohio Grown Rubber" and the second entitled "Another Ohio Grown Rubber"—were printed in the "Ohio Naturalist."

While not encouraging from the standpoint of the investor, these papers are distinctly interesting from the standpoint of rubber botany. We produce them below:

OHIO GROWN RUBBER.

Product of Common Milkweed (Asclepias Syriaca). A common plant belonging to the *Asclepiadaceae*; found abundantly



PLANT AT LEFT, MILKWEED (*Asclepias Syriaca*), WHICH GROWS ABUNDANTLY EVERYWHERE IN THE UNITED STATES. PLANT AT RIGHT, MILKWEED (*Asclepias Cornutii*). BEST EXAMPLE OF A NATIVE RUBBER PRODUCING PLANT IN THE NORTH TEMPERATE ZONE.

throughout the United States; classed as a weed, convicted as a bee-killer, advocated as a rubber producer. Too well known to need description.

Latex. Milk-like, thin; acid or neutral reaction; characteristic odor of milkweed; does not coagulate on standing in a closed vessel; imperfectly coagulated by acids; thickened or partially coagulated by ammonia; coagulated by heat; coagulated by alcohol.

Coagulated Latex. The coagulum is plastic and can be

molded into cakes resembling some of the cheaper grades of rubber. The whey contains mineral matter and sugar.

Caoutchouc. Obtained from the coagulum. Is flabby; lacks strength and firmness; is high in gravity. Responds to the sulphur chloride and bromide tests. Yield of rubber, on basis of latex, is 2 to 3 per cent.

Resin. White, tasteless, odorless. Gives "asclepione," described by Watts as radiating crystals insoluble in water and alcohol, and is not attacked by dilute caustic.

This plant has been suggested as a source of crude rubber. The project has engaged the serious attention of several parties during the past twenty years. A careful study of the question, covering a period of twelve years, indicates that while rubber is a product of the plant, the amount is so small, its quality is so inferior and its cost of production is so high, that a profitable industry is out of the question.

ANOTHER OHIO GROWN RUBBER.

Of the many kinds of crude rubber, the botanical family, *Apocynaceae*, produces its share of good grades. Mangabeira (genus *Hancornia* in Brazil), Benguela root rubber (*Landolphia*) and *Funtumia*, both Africans, are notable examples.

The *Apocynaceae* are trees, shrubs and herbs, with a milky acrid juice, numbering some 1,000 species, grouped into 130 genera, inhabiting sub-tropical areas. This family of plants produces a varied line of economic products, such as edible fruits, dyes, drugs, fibres, ornamental plants and caoutchouc. The Madagascar Ordeal Plant, whose seed contains the most powerful poison known, and Eden's Forbidden Fruit, register here.

Several members of the type genus *Apocynum*, of this family, are common to the United States, the so-called Indian Hemp, *Apocynum cannabinum* and *A. androsaemifolium*. During the summer of 1911 I examined the latex of the latter species for quantity and quality of its rubber. The results of this investigation show that the latex of this plant gives a small quantity of good grade rubber.

The latex is white, viscous, neutral or slightly acid, and has the strong acrid odor peculiar to this plant. The latex reacts with the usual coagulating reagents, in the following manner:

Acids do not coagulate; latex becomes thin.

Alkalies do not coagulate; restore the viscosity; change the color from white to brownish yellow.

Boiling coagulates slightly and slowly.

Acetone in proportion of one-tenth volume coagulates immediately and completely; liquid is colored chocolate red.

Formaldehyde coagulates readily, but is much slower than acetone.

Phenol coagulates the latex, but gives a soft product.

Salt solution coagulates slowly, giving a finely divided precipitate, hard to coalesce. Boiling the saline solution gives a soft product; not successful. Of the above methods, the use of acetone or alcohol, and formaline, are the only ones recommended. Of these two, acetone is preferred.

The latex of *Apocynum* differs from that of *Asclepias* in that it coagulates spontaneously, even if it is kept in closed containers. The spontaneously coagulated latex gives:

Liquid portion 67.58 per cent.

Cheese (wet) 32.42 per cent.

The liquid is white, slightly acid and acrid in odor. This liquid failed to coagulate after addition of more acid. Slight excess of alkali increased its viscosity, changed its color from white to brownish yellow, but did not coagulate or precipitate it. Boiling had no effect. Excess of acetone gave a finely divided precipitate, the particles of which were not cohesive. Evaporation of the mixture, after washing with water and treatment with boiling

acetone, gave a small quantity of black, soft rubber, destitute of strength. The cheese was composed of:

Water	33.06 per cent.
Rubber	3.99 per cent.
Resin	62.95 per cent.

Working up this cheese of the plant in the usual manner with solvents, straining through gauze to remove dirt, evaporating, with low heat, the excess of solvent, adding an excess of precipitant, washing the precipitant and dissipating the precipitating agent, gave a good grade rubber.

The rubber obtained in this manner is black, firm, not tacky, odorless and strong. In quality it is much better than the product obtained from its neighbor, milkweed. The qualities of this rubber confirm the old adage that "blood is thicker than water, and prove a more apt one, that "Apocynaceous rubbers are good rubbers."

Milkweed latex, however, is richer in rubber than that of Indian Hemp, but in both cases is entirely too small to be profitable. Of the total rubber present in the latex, 96 per cent. of it is won in the cheese formed by the natural coagulation of the latex. Ninety-six per cent. of the total rubber found ranks as Grade A, and four per cent. grades as C.

The resin is mahogany red, transparent, medium hard, with slight characteristic odor and tasteless.



TWO SPECIMENS OF INDIAN HEMP (*Celastrus scandens*) - A VERY COMMON WEED.

During this investigation we have found that the soil conditions under which the plant was grown exert an influence upon the amount of rubber in the latex. Plants grown upon dry, sandy soil of West Akron gave a latex containing 2.27 per cent. rubber and 20.69 per cent. resin. The latex of plants grown upon the wet swamps of South Akron contained 1.12 per cent. rubber and 15.04 per cent. resin. Rubber from dry grown plants is of better quality than that of wet grown plants.

Natural latex from dry *Apocynum* contains:

Water	72.20 per cent.
Solids	26.21 per cent.
Ash	1.59 per cent.



FRUIT OF THE OSAGE ORANGE. DOES NOT CONTAIN RUBBER, BUT JUICE IS EXTREMELY STICKY.

This rubber content in fresh latex is 2.36 per cent.

The above figures refer to latex taken from plants near the end of the growing season.

Apocynum also gives apocynine, a drug having a similar action to digitalis and, according to Biddle, being an efficacious remedy in dropsy. The bark of this plant gives a strong, tough fibre, at one time much esteemed by the American Indians for bow-strings and fishing nets.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS

A European firm is in the market for gutta percha rosin, used in the manufacture of sealing wax. A special quality only will be considered, in quantities up to 1,500 tons per annum, and quotations should be c.i.f. Danzig, Germany. Report No. 13,482.

An American consul reports that the largest firm of automobile dealers in his district desires catalogs and prices—in Spanish or French—from makers of automobile tires, cushions, curtains and accessories. Report No. 13,487.

An European firm enjoying a good reputation desires to represent an American manufacturer of India rubber hose for water, gas and other purposes, also other kinds of rubber goods. Report No. 13,548.

A European business firm has requested the assistance of an American consulate in securing connections with first-class American concerns, to handle rubber goods, etc. The firm has recently determined to devote particular attention to American goods. Report No. 13,562.

An English manufacturer of dry battery ignition coils, etc., for motor cars, motor boats and motorcycles, desires to communicate with American manufacturers of rubber impregnated insulation tape for electrical purposes. He is ready to place a large contract and states that the matter is urgent and that he would like as quick a response as possible. He also states that he is in a position to supply first-class references. Report No. 13,568.

BOLIVIA AND COSTA RICA SEEKING A MARKET FOR BALATA AND RUBBER.

Telegrams have been received by the Bureau of Foreign and Domestic Commerce, Washington, from American consuls at Panama, San José (Costa Rica) and La Paz (Bolivia), with information regarding, respectively, balata and rubber for which a market is desired.

AUSTRALIAN RUBBER COMPANY RESUMES ORIGINAL NAME.

The company originally known as The Colonial Rubber Co., Ltd., rubber manufacturers and merchants, of Sydney, New South Wales, and which later changed its name to The Johnston Tyre & Colonial Rubber Co., Ltd., announces that it has resumed its former title.

Plantation Rubber Supplies.

How Mixed Consignments May Occur and How the Difficulty Can Be Overcome.

By E. L. Killick, London.

THE statement is not infrequently made by certain dealers of a few American consumers of plantation rubber that in its passage from the producer in the East to the consumer in the West the commodity is intercepted in London, that the best grades are taken out and that the balance, very much mixed, is then forwarded to New York. Although it is no part of my purpose to whitewash those who handle the rubber in London, for I hold no brief for anyone engaged in the trade, such a sweeping statement as the foregoing forces one, however unwillingly, to take up a defensive attitude on behalf of the agencies in London concerned with the handling and distribution of the product.

Nor is it any part of my object to get behind the view said to be held in America in this matter and seek, by imputing ulterior motives, to belittle the charge. Doubtless there are wheels within wheels, and certain it is that a purchaser does not usually extol the goods he wishes to buy. The question is rather as to whether such a view as that already cited is in reality entertained in these days by manufacturers of the highest standing and experience in the United States. The business acumen of the American manufacturer is held in too high repute in this country to render possible a belief that he would tolerate for any length of time such a state of affairs as that under discussion. But where there is smoke there is fire, and it would, therefore, be too much to assert that the complaint in question is absolutely baseless and unjustifiable. However flimsy or remote, there must be some kind of foundation for the story. In the first place it is plausible, and it must be admitted the conditions at present ruling in the plantation rubber industry lend it color. On this account alone it may have become a sort of fetish to be hugged and handed on from one to another.

Now as to the origin of what at this juncture must be regarded as mainly fictitious: In the early days of plantation rubber, when no single estate had reached maturity and no individual property was producing in bulk, the commodity came to market in small consignments as numerous as they were varied in character. Ceylon was the first producer in the Middle East, hence all plantation rubber, much of which Ceylon would be ashamed to own, was dubbed "Ceylons." Some of it may have been *Funtumia*, or Ceara biscuits from African estates, or Rambong from the Dutch East Indies. It is not suggested that buyers in America were ignorant of the actual source of their supplies. The term was simple and comprehensive and was no doubt no more than a trade name. Nevertheless the term was unfortunate and without doubt has done much to injure the reputation of plantation rubber in general, apart from the slur cast upon the Ceylon product and the sin of omission in regard to British Malaya.

The plantations of the Orient, which in the minds of some at least signified Ceylon alone, were thus identified with all the rubbish masquerading under the name of plantation rubber. Anything but the accepted and familiar brands of wild rubber, however ill-prepared, whether Ceara, *Castilloa*, *Funtumia*, *Ficus* or *Hevea* was credited to the estates of the Middle East, or more particularly to Ceylon. But this was not all. Just as all plantation rubber was termed "Ceylons" so all sheet rubber came to be known as "Highlands." The story is still being retailed here that a certain American consumer once observed that he obtained all his supplies from that well-known Ceylon estate Highlands & Lowlands. This is assuredly a libel, for everybody knows that Highlands is one of the leading estates

in the Malay Peninsula. Doubtless "Highlands" was merely a trade term like "Ceylons," nevertheless, its use gave rise to much misconception here—misconception of a kind that was scarcely advantageous to American consumers. To this is no doubt due the statement that at about the time of the Rubber Exhibition in New York something like 100 per cent. more "Highlands" rubber was being received than the entire estate produced. Such a state of affairs cannot be described as fraudulent. Dealers had merely adopted the term chosen by their customers for plantation sheet. There was apparently no guarantee that such supplies were the actual product of the Highlands & Lowlands estates in Selangor, Federated Malay States.

It is not suggested that there is less knowledge of the commodity displayed by American than British consumers. Abysmal ignorance is occasionally exhibited by users of plantation rubber in this country. If asked what the product actually is and how and where it is obtained, there are individual buyers who would be entirely at a loss. My point is, however, that the terms used by the trade in America gave rise to false impressions on this side, with the possible result that certain unscrupulous dealers taking ignorance for granted, attempted to foist upon their American customers supplies of plantation rubber that were not what they purported to be. But these matters are in the main things of the past. All the same, prejudice dies hard and plantation rubber proper has much to live down. The unfortunate terms applied to the product by the trade in America have, however, unwittingly been responsible for much of the harm done.

When plantation rubber first came to the market it was the product of certain tea plantations in Ceylon where *Hevea* had been interplanted. Preparation to a common standard was at that stage obviously impossible. Supplies differed widely. Consignments were small and usually arrived in tea chests. The American consumer who had been accustomed to receiving fine hard Pará in 3¼ hundred-weight cases, objected to the tea chests of, may be, 50 pounds of plantation rubber. He asked for the product to be bulked. Henceforward his plantation rubber came to him in larger cases, the contents of which often showed considerable variation, for in those days a consignment of, say, five tons had to be collected from dozens of small lots. Here I think we have the origin of the belief said to obtain in America today that consumers stand at a disadvantage in that their supplies are very much mixed and not up to the standard they require. As originally shipped, every separate consignment was traceable to its source, for its history was written on the case. By bulking together in London all individuality was lost, and the only good purpose served was to give the American consumer his supplies in larger cases. Here again we have to go back to ancient history to find the origin of views that are still in circulation.

For the rest, I submit that the charges made are not infrequently due to misconception on the part of consumers. Let us assume that an American manufacturer, who buys to type, requires five tons of type No. 15. Now this particular type may be a variety that is something midway between what are known as tree scrap and earth scrap. It is tolerably obvious that if an order for such a nondescript variety is to be fulfilled by a uniform material it must be obtained from one particular estate. The odds are, however, that no estate produces more than two or three per cent. of such a grade. What then is to be done? The five tons required must be made up of consignments from

different estates as near as possible to the type specified. There is no alternative. The variation may be more apparent than real, but it serves to perpetuate the belief that the buyer is being unfairly treated.

Let me give another example of the way misconception may arise. The property of a rubber plantation company may consist of several different estates or divisions, each of which has a native name. The company may derive its name from one division which we will say is Kuala. Rubber from each section is stamped with the name given to that section, so that a big consignment of the Kuala Company's rubber may contain but a small proportion marked "Kuala," the remainder being marked with various names all unfamiliar to the purchaser. He might reasonably suppose that he had received a mixed consignment, especially as the supplies from the various divisions would probably differ slightly in appearance. Nevertheless he is receiving a supply as uniform as it is possible to get.

In the foregoing I have merely sought to explain away misunderstandings. It is conceivable, however, that cases do arise from time to time which give cause for dissatisfaction or complaint. For example, if an American consumer, knowing the spot price of fine pale crepe to be 2/3, cables an order for this grade at 2/2, he receives something that is not quite the finest quality of pale crepe. The best is done for him at the price. He is dissatisfied, because it is inferior to other consignments he may have received, but the fault is his own. A quotation of 2/3 for fine pale crepe means that is the price and no other figure. When a particular grade is wanted it is often necessary to buy the rubber from one estate. This may involve payment of a small premium. The manufacturer refuses and he is then obliged to buy collections, for there is no other course open to him. Then again there are admittedly dealers and dealers. An American firm whose representative in London has no axe of his own to grind is naturally better served than one that obtains its supplies from a dealer who is making all he can out of the market for himself. There is perhaps one other point I may touch upon and that is as to the speculator in the commodity in New York. It is obviously impossible for me to tell your readers anything they do not know on this score, but it does seem to the onlooker at this distance that the question of mixed consignments may not be unconnected with the operations of the New York speculator in the commodity.

In the ordinary way of business it is difficult of belief that the London dealer, in his own interests, would discriminate against his American customers. There are brokers in London who have dealt in hundreds of tons of plantation rubber going to American manufacturers without receiving a single complaint. It is doubtless the occasional exception that has given rise to the view that provides the text of this article. Nobody is better informed as to plantation rubber than the big American consumer, and it is no exaggeration to say that the major portion of the best plantation rubber produced goes to the United States. For years the emissaries of American manufacturing groups have scoured the Middle East gathering every scrap of knowledge to be obtained about plantation rubber. I, myself, ran across an American in the year 1911 on one of the "show" estates not many miles from Penang. He was traveling in the interests of a group of American manufacturers, and had already covered most of the best estates in Ceylon and conferred with most of the leading planters in the island. A month or two later I met him again in an out-of-the-way corner of Java. We journeyed together to a large plantation some fifty miles distant, where he stayed for several days, going into every detail of estate work connected with the tapping and preparation of plantation rubber. By that time he had compiled statistics of incalculable value to his principals and had acquired a knowledge of the plantation industry that can only be described as encyclopaedic. I doubt if there was an estate through-

out the plantation zone as to the relative value of which he had not a very accurate idea. Certainly he knew every estate that was producing, or was likely to produce, the best grades of rubber. A few weeks ago I met him again at the Rubber Exhibition here. He was wandering round with an air of distinct boredom, and this I could only attribute to the fact that he had found no one who could tell him anything he did not know about plantation rubber. I take it that my acquaintance is only one among many men of similar experience, and I refuse to believe that the American manufacturer of any standing honestly thinks that he is not receiving fair treatment in the London market, for no consumer in the world is better informed than himself.

All the same, the fact should not be lost sight of that this is an extremely young industry. Within the space of a few short years the production of plantation rubber has increased from a few tons to a quantity in excess of all the rubber the rest of the world produces. Nor is that all. Although the product of the same *Hevea*, it is a totally different article from the hard Pará of South America. Its characteristics are far from being fully understood by the manufacturer, for no two manufacturers hold the same opinion about it. It is only within the past few months that plantation rubber has been frankly acknowledged by British consumers to be equal to and in some respects superior to fine hard Pará. Even so, opinion differs widely as to the relative merits of different grades. One obtains a 25 per cent. better result with pale crepe than with smoked sheet. The experience of another is entirely the reverse. As this applies to every grade of cultivated rubber, the multiplicity of grades produced is not to be wondered at. Already the product is more highly standardized than Pará, but much still remains to be done. In some degree, however, the grower is waiting on the manufacturer. When the latter has finally made up his mind exactly what he wants, the producer will have little difficulty in supplying it. The planter was told that he could not produce good rubber. He has proved that he can. But one manufacturer may prefer to receive a dozen different kinds in a consignment whilst another requires but one. So long as such views exist the business is bound to remain somewhat chaotic.

The very immaturity of the industry is partly responsible for what is called the mixed nature of supplies. As the plantations come into full bearing and the total production increases, this fault will be minimized. It will, however, never be entirely eliminated so long as rubber is bought on appearance and physical tests. One of the anomalies of the situation is, that rubber which the well informed know to be equal to any produced may, if slightly mouldy, be obtained at a discount of a penny or twopence a pound from the prices for the "best" grades. The remedy, presumably, is to buy on specification dictated by vulcanizing tests. Efforts are being made to inaugurate such a system. If practicable, it is certain that no more will be heard about variability and the minor complaints which reach the market respecting plantation rubber.

There remains one other point to be dealt with, and that is perhaps the most important of all. Much has been heard of late as to the advantage (sic) of buying in the Eastern markets and shipping direct to America. Now there is at present one drawback, and that a very important one, to this method of doing business. The Rubber Trades Association of London has laid down certain definite standards of quality, and those standards are the highest known to the plantation industry. Conformation to those standards is strictly enforced and all queries are settled by an arbitration committee. The view is generally held that plantation rubber regarded as first or second quality in Singapore or Colombo would not necessarily pass those standards in London; in other words, that the London standard is higher than any other. It follows, therefore, that the buyer in London is protected in a way that is impossible in any other

market. As I have said, any disputes are settled by arbitration.

The development of the Mid Eastern markets would be welcome for more reasons than one, but unless or until they can give the buyer the same security and protection afforded in London, their growth will be checked.

No doubt the idea of shipping direct arose out of the suspicion that the American consumer is not receiving fair treatment in London. Although I have endeavored to show that this suspicion has little foundation in fact, there is no obvious reason why the buyer should not have supplies sent direct without intermediate handling in London. More especially would this apply in the case of forward contracts made with plantation companies. Assuming that the buyer trades in such a way as to avail himself of the protection afforded by the London market, the consignments would be sent direct from the plantation to New York, and samples despatched at the same time to the London broker. In the event of a dispute, the broker would submit the samples to the Rubber Trades Association, and the matter would be settled with the minimum of trouble.

It has been shown, then, that while there is no foundation for the statement that in the handling of plantation rubber in London the American consumer necessarily suffers, it is unfortunately true that consignments are more mixed than is desirable. But much of this is avoidable. If an American buyer wants five tons of fair average quality sheet, for example, he should give a list of the marks he knows will suit him. The dealer will then buy those marks. If, on the other hand, an order merely states five tons of smoked sheet, without further specification, the odds are that a mixed lot will be received. At present it is sometimes impossible to supply a norder for, say, twenty tons of a particular mark if the grade required is not one of the standard qualities. On the other hand, an order for fifty tons or more of fine pale crêpe can be executed without much difficulty. It is not a question of unfair treatment. The great variety of types produced and the mushroom growth of the industry are partly responsible for such trouble as arises. A better understanding of the capacity of the industry and a closer acquaintance with market conditions would remove much of the misapprehension that exists. Nothing but good can come of ventilating the position in every possible way, and if any of your readers care to express their views or to put questions, I shall be pleased to go further into matters through the medium of *THE INDIA RUBBER WORLD*.

WHAT THE RUBBER CHEMISTS ARE DOING.

THERE has recently been published by permission of the Bureau of Standards at Washington a method for the direct determination of rubber by combustion of the nitrosite and the determination of the carbon.

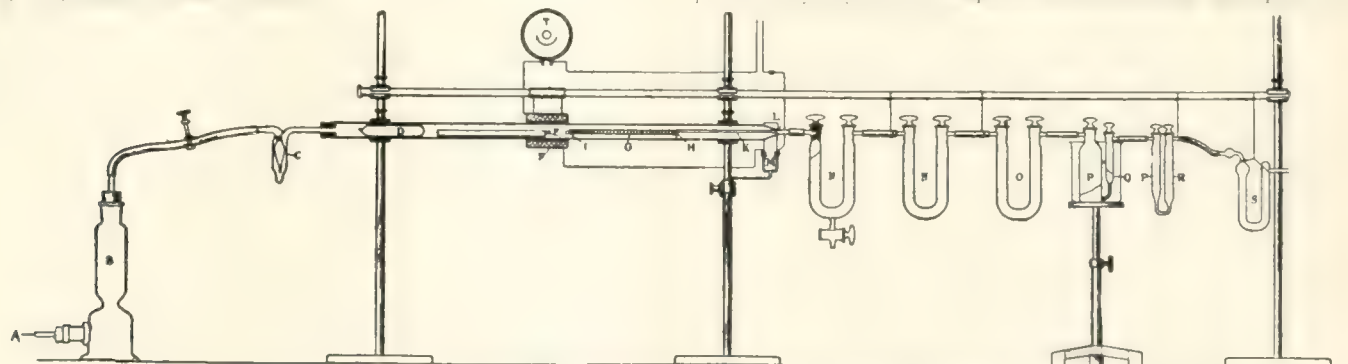
The action of sulphur trioxide on rubber was noticed very early, as Harries in 1901¹ described it, but all authorities agree that it seems to be of varying composition.

The proposed method seeks to avoid the difficulties which have been encountered in working previously with these compounds by determining the carbon content, which is said to remain constant or at least contain all the carbon of the rubber sample.

"The procedure in brief consists in first forming the nitrosite of rubber by the action of nitrogen trioxide gas upon a finely ground and acetone-extracted sample of the rubber suspended in chloroform. After the completion of the action the insoluble nitrosite, fillers, etc., are filtered from the chloroform and the nitrosite is dissolved in acetone; the suspension of finely divided mineral matter is then allowed to settle out or is thrown down with the centrifuge. An aliquot portion of the solution is transferred with a pipette into a small flask and its volume reduced by evaporation to a few centimeters. This small volume of the acetone solution of the nitrosite is now transferred with the help of ethyl acetate to a porcelain boat containing alundum, and after the acetone and the ethyl acetate have been expelled by warming the boat for several hours in the drying oven the nitrosite is burned in a current of oxygen, and the carbon dioxide formed is absorbed in soda lime and weighed."

The method proposed is to grind a sample to 20 Mesh if possible and weigh out $\frac{1}{2}$ gram and extract with acetone in a Wiley or Cottle extractor. Transfer to a 50 c.c. flask and dissolve or swell in 40 c.c. of chloroform. Nitrogen trioxide is made from arsenic trioxide with 1.3 sp. gr. nitric acid, and this is passed through the rubber solution in chloroform kept cool by immersing the flask in water. A deep green color shows when enough has been used.

Filter the chloroform solution through a gooch and wash with chloroform and place the asbestos mat with nitrosite in a 75 c.c. beaker, dissolve in acetone and pour into the original graduated flask, make up to mark and settle and take out 25 c.c., and put in crymmyer and evaporate to small bulk and pour into



APPARATUS FOR THE DIRECT DETERMINATION OF RUBBER BY THE COMBUSTION METHOD

TRADE FACILITATED BY NEW SHIPPING BILL.

With the passage of the new shipping bill the fleet of freight vessels owned by W. R. Grace & Co., importers, numbering ten and having a total tonnage of 50,000 tons, will be operated under the American flag. Most of these vessels are now in the South American trade, while four more are being built for the company for the Panama canal trade. It is also expected that the Standard Oil Co., now a fleet of 70 tank steamers, and the United Fruit Co. with 25 vessels floating the British flag, will join the American shipping contingent as soon as the necessary steps can be taken.

a small boat two-thirds full of alundum. Rinse with ethyl acetate, dry and place in the combustion tube.

As shown by the illustration herewith, the combustion tube is a Morse and Taylor tube with an electrically heated platinum spiral wire for a catalyzer.²

This is heated electrically by a nichrome coil on the outside insulated with asbestos and movable along the tube.

Otherwise this is about the usual combustion train as or-

¹Berichte, 1901, vol. 34, p. 2661, and *Journal Society Chemical Industry*, 1901, p. 1123.

²E. & A. Cat. No. 2194.

dinarily used for carbon determinations. The carbonic acid is absorbed by the soda lime in P and is weighed in the usual manner.

In considering this method it will be realized that after all this only determines the carbon in the rubber and the combustion method is known to be somewhat unreliable and troublesome. That this is so is shown by another paper, which has also been published with the consent of the Bureau of Standards recently and read at the Cincinnati meeting of the American Chemical Society.

In this paper, which is on the determination of carbon in iron and steel, the author, J. F. Cain, points out some of the difficulties in accurately determining carbon dioxide obtained during combustions of steels by the use of weighed absorption tubes. These are as follows:

1. The elaborate precautions required to prevent change in weight of the tube due to loss or gain of moisture as the gas is passed through.
2. Difficulties in weighing caused by electrical effects in wiping by buoyancy and by changes in temperature.
3. The necessity of maintaining constant conditions with respect to the atmosphere within the tube at each weighing.
4. Danger of getting chlorine or sulphur in the absorption tube from these substances in the sample.
5. The difficulty of determining whether the increase in weight of the tube is due solely to carbonic acid absorbed.

All the above objections will apply to the determination of carbon in rubber as well as in steel, as both are carried out in practically the same apparatus and by the same process.

Mr. Cain, therefore, recommends that the carbon be determined by absorbing the CO_2 in barium carbonate, thus precipitating it and afterwards titrating the carbonate after filtering. The barium carbonate is dissolved in an excess of hydrochloric acid and titrated back with standard barium hydrate. As phenolphthalein reacts alkaline with barium carbonate, methyl orange is used as indicator. This method of determining carbon seems far better than the one specified in the rubber analysis and should be adopted.

In using this method of determining rubber, it must be assumed that no substance present in the sample is insoluble in acetone that might be acted upon by nitrogen trioxide gas in the chloroform solution. It is assumed that this method is to be used for all classes of rubber goods and the substances which may be added in the mixing are, of course, of very diverse character. In the first place in many classes of rubber articles it would be impossible to separate the fibre from the sample before analyzing. It would be necessary to be sure that none of the fibres will be acted upon by the trioxide in any way that will give an insoluble product in the chloroform and dissolve in the acetone. It is certain that nitro-cellulose is such a product, and it should be proved that there are no like products formed from the trioxide of nitrogen.

It is also agreed by the authorities that acetone does not dissolve out completely all kinds of pitches or asphalts nor the substitutes which have been vulcanized to a high degree with sulphur when made.

In fact, the number of substances containing carbon which may be used in rubber compounding is almost unlimited and they are not all soluble in acetone, so that it must be assumed that the nitrogen trioxide has a highly selective affinity for the caoutchouc molecule.

Of course, if the method is to be limited to samples which contain only known compounds in addition to the rubber, then it is not of wide application.

In 1905 Caspari showed¹ that gutta percha and balata formed nitrosites the same as caoutchouc, so that this method would not distinguish between these substances.

The present method sometimes used of determining rubber by difference is, of course, open to many objections, and it is hoped that a method will be found that will not only determine the rubber contents, but if possible determine the kind of rubber.

W. Vaubel and E. Weinruth² investigated the bromination method of Buddle-Axelrod and Vaubel. They found it unreliable except on Pará rubber. It failed to give concordant results on vulcanized rubber or on crude.

Pontio³ recommends boiling vulcanized rubber with toluene, xylene and cymene which dissolve the caoutchouc. Filter while hot, then evaporate to a syrup and precipitate the pure caoutchouc with acetone.

The determination of carbon in the above precipitate would not be open to objections of liability to contamination with other carbon compounds that the first method is.

THE INFLUENCE OF NITROGEN COMPOUNDS ON THE VULCANIZATION OF RUBBER.

ONE of the most important results of modern chemical and scientific work is the recognition of the importance of small quantities of compounds or elements when present in the main commercial articles of chemical nature. Of course this recognition is not altogether a recent phenomenon, for one of the most important examples of this was the discovery of the controlling influence of minute quantities in the manufacture of Bessemer steel, and it was not till ores were obtained of low phosphorus content that this industry became possible. In Bessemer steel there must not be more than one-tenth per cent. of phosphorus or the material is worthless.

In the rubber industry it has not been until recently that this subject has been given much attention, particularly in relation to the small quantity of nitrogen found in most commercial samples of rubber.

Thus we find that Weber, in his pioneer work on rubber chemistry, notes the insoluble constituent of rubber but concludes that it was an oxidized hydrocarbon and a link between rubber and cellulose, and he omitted to examine the insoluble matter for nitrogen or to make any reference to nitrogen as being present in rubber, except in a mere hint on page 5, where he quotes Faraday's analysis of latex showing 1.90 per cent. of albumen. The subject is dismissed with the idea that with good coagulation work this "impurity" may be eliminated.

In 1907 Dr. David Spence ("Journal Society Chemical Industry," p. 1287, of 1907) investigated the subject of the distribution of protein in rubber, and found that in the insoluble part there was sometimes as much as 5.4 per cent. nitrogen. He considered it mainly protein; this would mean about 33 per cent. protein.

Even Schidrowitz, in his book published as late as 1911, while noting the work of Spence, does not disclose any knowledge of any effect of this nitrogen constituent on rubber, though noting that plantation varieties are deficient usually in nitrogen.

At the Eighth International Congress of Applied Chemistry, held in New York in the fall of 1912, Clayton Beadle and H. P. Stevens read a paper describing an investigation of *Hevea* latex and giving determinations of the nitrogen in the latex and in the dry crêpe produced. They found that the latices contained from 1.31 per cent. to 1.56 per cent. protein; that the percentage of protein of the total solids in the latex varied from 5.5 per cent. to 5.1 per cent., and that about one-half this protein was retained in the washed and coagulated rubber in the form of dry crêpe.

In the proceedings of this same congress, Lothar E. Weber gave results of experiments tending to show that the extraction of the resins from plantation sheet prevented vulcanization of the extracted sheet, but in an article by Stevens in the "Colloid

¹Chem. Zeit., 1914, 1, 831; German Zeitung, 1913, pp. 28-92, and Journal Chemical Society, April, 1914, p. 1287.

²Journal Chemical Society, April, 1914, p. 301; Annal. Chim. Anal., 1914, pp. 19-60.

Zeitschrift," which was noted in this journal for May, 1914, it was shown that the nitrogenous constituents had much influence and the resinous constituents little influence on vulcanization.

Clayton Beadle and H. P. Stevens separated the protein matter which contained the nitrogen from smoked sheet. ("India Rubber Journal," 1912, pp. 554-604; Abstracts in "Journal Society Chemical Industry," 1912, pp. 999 and 1099.) Then they vulcanized the nitrogenous part and the nitrogen free part and the original sheet. It was found that the part of the rubber with high nitrogen contents vulcanized more rapidly and combined with more sulphur than the original sheet, and that the nitrogen free part combined with the least. The strength and resiliency of the nitrogen containing part was the greatest, the original sheet being less, and the nitrogen extracted part was the weakest. To assure themselves that the solution in benzene was not the cause of the difference, they analyzed and cured four samples as follows:

- 1st, the original sheet untreated in any way.
- 2nd, an original sheet swelled in benzene.
- 3rd, the lower half of solution containing nitrogen and coloring matter.
- 4th, upper part free from nitrogen.

The nitrogen contents were as follows: No. 1—0.47 per cent.; No. 2—0.46 per cent.; No. 3—0.84 per cent., and No. 4—0.07 per cent. These were mixed with 7 per cent. sulphur and cured for three hours at the steam pressure given below, with the following results:

	Per Cent.			
	No. 1	No. 2	No. 3	No. 4
3 hours' cure at 35 lbs., comb'd sulphur.	2.5	2.3	3.2	0.9
3 hours' cure at 45 lbs., comb'd sulphur.	4.6	4.1	5.2	0.8
3 hours' cure at 55 lbs., comb'd sulphur.			6.4	3.6
3 hours' cure at 65 lbs., comb'd sulphur.			6.6	6.1

The tensile strengths and elongations of the cured samples were as follows:

Three hours' cure at 35 lbs. pressure.				
	No. 1	No. 2	No. 3	No. 4
Tensile strength	59	53	75	13
Elongation	910	950	840	710
Three hours' cure at 45 lbs. pressure.				
Tensile strength	100	100	95	33
Elongation	740	780	600	1140
Three hours' cure at 55 lbs. pressure.				
Tensile strength	50	..	..	41
Elongation	470	..	..	960
Three hours' cure at 65 lbs. pressure.				
Tensile strength	40	..	..	30
Elongation	380	..	..	400

The resins were about the same in all samples.

The tensile strength is calculated in proportion to 100, taken as the best result.

In calculating the tensile strengths, those found for samples Nos. 1 and 2, at three hours' cure at 45 pounds pressure, were taken as 100, as these were the best results obtained from any of the specimens.

The above tables conclusively show the influence of the nitrogen compounds in hastening the cure and combining more sulphur in the same time, and they show how the lack of the nitrogen constituent results in lack of cure, and a resulting poor tensile strength and elongation.

Turning from the natural constituents of rubber, it may be well to inquire whether nitrogenous compounds may be added to rubber to act as hasteners of vulcanization or to give improved products.

In the "Gummi Zeitung," No. 28, p. 731, it is shown that albumen added to rubber increases the speed of vulcanization.

In the French patent to the Xylos Rubber Co., No. 466,243, scrap rubber is heated with caustic soda and a small quantity of an aromatic amino compound; for example, aniline, which acts as a catalyst to unite the free and combined sulphur with the alkali.

In the German patent No. 265,221 of 1912, and English patent No. 11,530, 1913, Beyer & Co. claim a "process of facilitating the vulcanization of natural or artificial caoutchouc," in which piperidine or its homologues are added to the vulcanizing masses. As an example, where Para rubber and 10 per cent. sulphur—to which $\frac{1}{2}$ per cent. piperidine has been added—are vulcanized at 135 degrees C. for 15 minutes, a completely vulcanized product containing 3.5 combined sulphur is claimed as a result. It is stated that without the use of the piperidine the same result would require an hour.

The same party, in German patent No. 266,618, uses piperidine or its homologues for producing hard rubber by adding 25 per cent. sulphur. In No. 266,619 they claim the use of derivatives or salts of piperidine. In No. 268,947 aliphatic amines, with open or closed chains and their derivatives, are said to be equally suitable with the above, and are claimed as also the addition product of carbon bi-sulphide and dimethylamine. In No. 269,512 it is claimed that with Para and 100 per cent. sulphur, and the addition of 1 per cent. of the compound of carbon bisulphide and dimethylamine, vulcanization takes place completely with 15 minutes' cure at 135 degrees C. In a previous patent, aniline was claimed for this object. Nearly all the agents above mentioned are basic organic nitrogen compounds and of the amino group; and these numerous instances of their use with rubber lead to the conclusion that amines in general have some hastening influence on the vulcanization of rubber.

In the German patent No. 273,744, of 1913, J. Ephraim improves synthetic, sticky or impure caoutchouc by adding from $\frac{1}{2}$ per cent. to 10 per cent. sulphur, and enumerates various other reagents, among them being naphthyl amine, and then heating at 140 degrees C. for one and a half hour. The heating is supposed to stop before the characteristic vulcanization takes place. It is claimed that this greatly improves caoutchouc.

In the German patent No. 273,482, of 1912, to W. Esch, the patentee incorporates a paste of albumen and lime with rubber and then smokes or tans it to improve its quality.

The piperidine product mentioned in the German patent No. 265,221 and English patent No. 11,530, of 1913, has appeared on the English market under the name of "Bayer Patent Accelerator," and it is claimed that the addition of a very small percentage to any rubber mixing accelerates vulcanization so that it can be carried out in from one-quarter to one-sixth the usual time. Samples were exhibited at the recent exhibition in London, and it is said to have been extensively taken up in France.

A consideration of the above references showing the use of organic nitrogen, usually in the forms of amines or like compounds, indicates that this form of nitrogen has some catalytic influence in hastening the combination of rubber and sulphur, and also has some influence in polymerizing the rubber itself. The field seems to be yet open for research as to the best reagent to apply from the wide variety available and the best methods of applying.

With the use of large quantities of plantation rubbers, which are known to be deficient in both proteins and other nitrogen compounds, and which are recognized as being much slower in vulcanization than Para, it would seem that it is desirable to determine on some substance like the above which will act as a hastener. Aside from any technically improved results which are to be anticipated, it is evident that any hastening of the process of vulcanization will result in great economies in manufacture.

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

The Editor's Book Table.

THE RUBBER INDUSTRY IN BRAZIL AND THE ORIENT. BY C. E. AKERS. London, 1914. Methuen & Co., Limited. [Cloth, 320 pages, with 12 illustrations. Price, 10s. 6d.]

THE official report of the "Akers Rubber Commission" of 1912-13 is dealt with by THE INDIA RUBBER WORLD in May, 1913 (page 417). It will be recalled that this commission (appointed by the Booth Steamship Co. and other prominent shipping interests) had two sections, dealing successively with the Orient and the Amazon. Mr. C. E. Akers, who formed part of each division, has now formulated his own report on the entire subject of "The Rubber Industry in Brazil and the Orient."

While the broad features of the Amazon rubber industry, as described in the first nine chapters of this volume, are familiar to most rubber men, the tenth chapter, comparing the Brazilian and Oriental rubber industries, is of special interest at the present time.

BRAZIL.

In the Orient there is an abundant and cheap supply of methodical plantation labor, while in Brazil the high wage rate prohibits the use of a collective force, all enterprise being dependent on individual energy, with little or no supervision. No effort is apparently made in that country to aid the growth of the rubber trees or to check pests. The trees are self-sown, only a limited proportion of those germinating coming to maturity in the dense forest shade. According to Eastern methods, the seed is selected and planted in special nurseries, the young trees being afterwards transferred to land prepared with a view to the maximum growth of root and branch.

The planted area in the East may, in the author's opinion, be taken approximately as 1,500,000 acres, containing about 180,000,000 to 200,000,000 trees. In the Amazon valley, he remarks, the acreage of planted trees is of such limited extent as not to affect the general conditions; while there is no reason to suppose the official estimate of 200,000,000 wild trees to be an exaggeration.

Mr. Akers states that the seed sent over by Mr. Wickham was of the white (or weak) description, valued in the Brazilian markets at 20 per cent. less than the black variety, which stands preëminent for the resilient quality of its yield, and which is the species principally grown in the Amazon valley. The rubber tree referred to for comparative purposes is the *Hevea*, as there is only an unimportant quantity of *Cauchó* or *Castilloa* in the East; while the opinion is expressed that within a few years the exportation of that class of rubber from the Amazon valley will be a thing of the past. It constituted only 23.37 per cent. of the Amazon rubber exports of 43,362 tons for the year ending June 30, 1913. Of this grand total 31,362 tons were produced on the upper rivers, including Bolivia and Peru, while 12,000 tons came from the lower Amazon and its tributaries. The production outside the Amazon valley for the period named (chiefly *Manihot* varieties from Ceará and the adjacent states) was 4,000 tons; the total Brazilian crop being thus for the rubber year 1913 about 47,000 tons, or 40 per cent. of the world's production.

As to rainfall, the Amazon valley and the Malay Peninsula each get about 100 inches annually, but in the latter the distribution is more uniform than in Brazil, where there is a regular dry season from June to October. Owing to the comparative absence of moisture in Brazil the heat, however, is less trying than in the East. With the aid of careful cultivation the rubber tree is successfully planted in the East in many different soils, avoiding undrained swampy lands or those exposed to strong prevailing winds.

The average daily wage rate (without rations) in the East is under 1s. (24.33 cents) for able-bodied men. In the rubber districts of Brazil the average is 6s. 8d. (\$1.62) per day, which, including rations, equals about \$2 per day. The rubber collector

receives no money wages, but is a partner on equal shares with the estate owner, being entitled to 50 per cent. of the rubber he delivers during the season. In the East the coolie lives on rice and curry at a cost of a few pence per day; while in the Amazon valley the laborers cannot purchase the daily necessities of life



A GIANT SPECIMEN OF *Hevea Brasiliensis*. MIRARY, RIVER MADEIRA. GIRTH AT 3 FEET FROM THE GROUND, 200 INCHES.

for less than 2s. 6d. (60.81 cents) per day. Responsible posts, as superintendents, can be filled in the East for moderate salaries, much below those demanded in Brazil for like services.

Rubber trees begin to produce in the East when four years old, while in Brazil twelve or fifteen years is the period when they are considered fit for tapping without injurious effects. In the East a rubber tree 75 feet high, with a girth of 100 inches at 3 feet from the ground, is thought a giant, while in the Amazon valley one of 150 feet in height with 200 inches girth is not considered remarkable.

Transport to the port of shipment in the East is easy and inexpensive whether the production be in Ceylon, Malaya, Java or Sumatra. In the Amazon valley the rubber properties are mostly situated on rivers far distant from Manãos or Pará, and the cost of steamer freight to one or the other port is a considerable item in the cost of production.

Two comparative calculations show the respective inclusive costs of Malayan and Brazilian rubber delivered in Europe as respectively 1s. 10d. (44.60 cents) and 2s. 4¼d. (57.27 cents) per pound. The Malayan quotation dates from 1912, since which the cost of production has been in some cases reduced, while the Brazilian calculation is of 1913.

Regarding future costs, Mr. Akers quotes an estimate to the effect that within five years, with increased yields and reduced percentage of weeding expenses, an average cost of 1s. 3d. (30.41 cents) will be reached by Malayan plantations. He sees no reason to doubt the attainment of this figure, which has become an accomplished fact on many Ceylon properties.

THE ORIENT.

The section more specially devoted to the Orient deals in the first place with Ceylon, the exports from which source were 10,686 tons in 1913, and are estimated at 15,000 for 1914; while the opinion is expressed that the additional large areas then coming into bearing will bring the total for 1915 to over 25,000 tons. With steady increases during the three following years, the Ceylon production for 1919 is expected to be 45,000 tons, with prospects of further development. The area now planted is shown as 234,000 acres, which will be slightly increased during the next five years, reaching 250,000 acres in 1919.

In the Malayan peninsula an area of 685,000 acres was under rubber in 1913, which produced 35,352 tons. With a view to further planting, 260,000 acres suitable for rubber cultivation have been alienated under permanent title. It is anticipated that a large portion of this land will be planted within the next few years. A number of useful calculations show the practical side of cost estimates, while the labor question is fully dealt with.

In Sumatra there was only a limited development of the eastern section until 1890. Access to the inland districts was forbidden until 1899, when tobacco and coffee planting were established in the province of Deli; since which time rubber and Robusta coffee have largely replaced Liberian coffee. Owing to the slowness of Dutch government procedure in the matter of new enterprises, the rubber planting industry has been in Sumatra largely confined to the districts already possessing transport facilities in connection with tobacco and coffee.

Estimates vary as to the area under rubber in Sumatra, the most reliable showing 167,000 acres (with 16,733,470 trees) for 1911, 227,000 acres for 1912 and 237,000 acres for 1913. The tendency during the last five years has been to open larger plantations than formerly; a notable case being that of the Holland-American Co. at Asahan, where the 35,000 acres planted during the last four years are, according to prospective arrangements, to be increased to 50,000. Millions of acres available for the extension of rubber planting remain untouched in Sumatra. One point worth notice is the opportunity afforded of planting rubber during the seven years of rest given tobacco lands between crops. The trees develop rapidly in both high and low lands, while the rainfall is variable.

The Sumatra rubber industry originated from the severe depression in Brazilian coffee. Planters were encouraged by the results attained in the Malay Peninsula to interplant rubber with coffee. A certain number of tobacco growers also co-operated. An estimate of cost up to the time of sale in Europe is 12.95*d.* sterling (26.25 cents). This compares with the price of prospectively 30.41 cents from Malaya. Estimates of future production range from 8,000 tons in 1914 to 44,000 tons in 1919, with only a slightly increased planted area.

In Java, the rubber estates are largely in the southern portion of the island, that section being for climatic reasons preferred to the northern district. The temperature is very even, with a good average rainfall in most districts. Statistics for 1913 show 240,000 acres under rubber, being an increase of 82,000 acres since 1911.

There is a great scarcity in Java of experienced managers and superintendents for rubber estates, particularly of those acquainted with the Dutch, Malay, Sundanese and Javanese languages. Exports of rubber from Java have been: 1911, 99 tons; 1912, 530 tons; 1913, 1,760 tons. Estimates for 1914 to 1921 range from 10,650 to 46,000 tons.

Such are a few of the salient points of interest in Mr. Akers' book, largely drawn from personal experience and treating in very readable form the question of "East vs. West," as affecting rubber cultivation.

THE DISEASES OF TROPICAL PLANTS. By Melville Thurston Cook, Ph. D., Professor of Plant Pathology, Rutgers College, formerly chief of the Department of Plant Pathology for the Republic of Cuba. McMillans. [8vo., 317 pp.]

This volume is an excellent illustration of what practical books should be. It is written modestly but with a simplicity and lucidity which come only from a writer who knows the subject he undertakes to treat. Without tiresome details he presents the groundwork of the study, showing the nature and functions of the living plant and the way in which those functions may be interrupted and the plant destroyed. The chief features of the various classes of organisms producing plant diseases are then described and the means of fighting them are considered. For instance, bacteria, inconceivably minute and circulating through the juices of a plant, are not disturbed by sprays which would destroy surface-growing fungi. It is an old proverb that to be able to see a danger robs it of half its terrors. No planter can deal with a disease when ignorant of the nature of that disease. The day of empirical procedure is past in agriculture as well as in medicine, and the planter who attempts to run his business without a knowledge of plant pathology is much like an engineer who runs a train without a knowledge of signals.

After giving this groundwork, Professor Cook takes up in turn the specific diseases of a great number of tropical plants, including all the staples. He considers the cankers produced by *Nectria*, the most important of rubber enemies. This is a fungus which acts in a way exactly similar to the chestnut blight of the eastern United States. That is, it finds entrance to a wound in the plant and, having established a foothold, attacks the cambium layer. This, of course, is fatal. A feature upon which too much stress cannot be laid, is that it is also saprophytic, multiplying in the dead tissues of the plant it has destroyed. The only way it can be controlled is to cut and burn every particle of the diseased portions. Certain cankers are common to both coffee and rubber, so it is recommended that rubber plantations be not directly established on worn-out coffee lands. The *Fomes semitostus* is likewise a fungus disease, attacking the roots of *Hevea*. In this case it is necessary to burn the whole tree, roots and all, while the disease spreads, mushroom like, through the soil. The author's general conclusions are that strict quarantine should be maintained, that planters should be constantly on their guard for infection and take prompt and drastic action when it is discovered. He also recommends that the chances of disease be localized by cutting *Hevea* plantations into small blocks, divided by plantings of *Ficus elastica*. The illustrations are well printed and informing and the whole work is interesting and well written.

RUBBER: ITS SOURCES, CULTIVATION AND PREPARATION. (The Imperial Institute Series of Handbooks.) By Harold Brown, [The Imperial Institute, London, 1913. Pp. 61.]

Of the making of books there is no end, and of handbooks this is no exception. This latest handbook of rubber carries out the idea that is expected of a work of its class—a vast amount of succinctly stated facts packed within reasonable space and brought down to date so far as possible. It is stated to be a work for both the student and the practical rubber man, and both will find in it much of interest. For the former the story will seem to be told with a completeness which leaves nothing to be desired; while the latter, knowing how impossible is the complete treatment of so vast a subject within so few pages, will recognize, at the same time, that the important facts regarding the raw material have been given with a great deal of regard for just proportion. As might be expected of a work published under the auspices of a patriotic British society, the rubber-producing countries outside of the British colonies receive little mention beyond the statistical tables, but these are

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

fairly and fully given. A further impress of its origin is also shown in the fact that the British colonies in Africa receive a whole chapter, while Malaya and Ceylon, which require no booming, figure only incidentally in the treatment of the subject.

The story stops with the production of the crude gum, which is not followed through the factory to the lumberman's boot, to the dump, the reclaiming plant, to the tire of the traveler's car, to the reclaimer's again and on to that mysterious region as yet not reached; but, as the story deals with rubber and not with its manufacture, it may be said to be fully told. Every plant which is a source of commercial, as distinguished from laboratory, rubber is fully treated and many curiously interesting points are brought out. Thus it is shown that *Hevea* has no preference for swamps but likes a hot climate and constant and abundant rainfall. This seems to explain its great success in the Malay Peninsula, where the waters above the firmament seem to be in permanently unstable equilibrium and a hundred inches of rain come down every season. *Castilloa*, it is noted, not only gives constantly larger returns as the tree matures, but the proportion of resin, high in the young trees, rapidly diminishes as the trees grow older. The statistics of yield seem to prove that those who have plantations of *Castilloa* already in the ground should not be too pessimistic as to the future of their investment.

In *Manihot*, as in *Hevea* and *Castilloa*, there are rubber-producing species other than the ones best known, and it is possible that *Manihot Glaziovii* may prove less useful than one or more of the other species. The African rubbers are treated at great length and the reader who yearns to know all about "fair red niggers," "white soaked niggers" and "pinky niggers" can learn of them in these pages. The chemistry of rubber is briefly but interestingly and adequately treated. In bringing the work down to date, not only are the figures of production and acreage given, but also the latest experimental conclusions about methods and profits of culture.

ANNALS OF THE MISSOURI BOTANICAL GARDEN, ST. LOUIS.

Now that science forms part of a liberal education, there is an increasing number of persons who can appreciate the above named "Annals," with its varied contents, all the subjects having a relation to botany in one form or another. Thus, Jacob R. Schramm leads off with a contribution dealing with elementary nitrogen in algae and in other forms. In a succeeding paper G. L. Foster takes up the question of the sources of nitrogen for marine algae. Five other papers by eminent authorities complete the contents of this number, which is of marked interest to botanists and other scientists.

ROYAL COLONIAL INSTITUTE YEAR BOOK.

Forty-six years have passed since the establishment, in 1868, of the Royal Colonial Institute, following closely upon the foundation of the Dominion of Canada. The object of the Institute was the propagation of information in Great Britain and the colonies regarding the latest and most authoritative facts as to the British Empire. Starting with 174 members, it had by 1880 attained a membership of more than 1,100. The comprehensive year book for 1914 shows about 2,000 resident and about 7,000 non-resident fellows. The proceedings of the past year are reported in detail, statistics of the British Colonies forming an appropriate conclusion to the year-book.

IMPERIAL INSTITUTE BULLETIN.

The second quarterly Bulletin of the Imperial Institute, London, for the year 1914—April to June—deals among other subjects with recent investigations at the Institute on Nyasaland soils, flax from East Africa, and copal from British West Africa. Another colonial possibility receives attention in an article by Mr. W. Small, Government Botanist of Uganda, on "Coffee Cultivation in Uganda," while "Tin Resources of Malaya and India"

treats of that industry, to be supplemented by a later article on "Tin in Australia and Africa," thus covering the whole ground.

MONOGRAPHS ON RUBBER MANUFACTURE.

In a series of eight monographs the "Gummi-Zeitung" is publishing handbooks to the principal sections of the rubber industry, the subjects including the whole range of practical rubber technology. From the first two booklets, issued by the "Union Deutsche Verlagsgesellschaft," of Berlin, the scope of the work is to be seen. If carried out in the manner intended, it will form a valuable addition to current rubber literature.

Handbook No. 1 deals with "Machines for the Manufacture of Rubber Goods," the authors being Herr Taubert (engineer) and Dr. Fritz Frank. In its 56 pages, with 52 illustrations, the subject is comprehensively treated, precedence being given to a general review of power installations, followed by a description of washing, drying and mixing plants; after which come hose-making, spreading and other machines.

Next in order are vulcanizing machines (furnaces, presses and molds), as well as machines for the manufacture of hard rubber, for vulcanizing sheet rubber and for making molded seamless articles.

Among the machinery specially referred to are hydraulic pumps, used in pressing and vulcanization in various dimensions, with and without accumulators, as well as winding apparatus. With an average of nearly one illustration to every page, this first handbook covers a wide field, and indicates a large amount of painstaking work on the part of the authors.

The second handbook received, "Die Fabrikation des Bereifungs Materials," by Herr E. Regler (engineer) and Dr. Fritz Frank, handles in similar detail the process of tire manufacture, under the two broad divisions of solid and pneumatic tires, containing 72 pages with 76 illustrations. In the first place the use of solid tires for horse-drawn vehicles is dealt with, followed by a discussion of their employment on motor trucks. The subjects of vulcanizing them on a steel band and of fixing a steel band on rubber, terminate the consideration of solid tires, which occupies a quarter of the booklet.

Under the heading of pneumatic tires are eight sections, including bicycle tires, pneumatic tires for aeroplanes, pneumatic tires for motor trucks with steel rivets and with leather anti-skid devices, air-tubes for automobile tires, as well as Palmer cord tires and other special constructions. In the concluding chapters the testing and treatment of tires are dealt with, a special description being given of repair shop machinery, equipment and operation.

Improved roads have been to a great extent due to the use of solid tires on motor trucks, such highways being a primary condition of successful tire operation. These brief extracts will serve to indicate the value of the two booklets issued and the prospective interest to rubber experts of the other handbooks still to appear.

A BOOK ON DUTCH GUIANA.

THE INDIA RUBBER WORLD has received a dozen copies of a little book of sixty pages entitled "Netherland Guiana, South America, Its Development, Resources and Possibilities," by James L. O'Connor of Paramaribo. This book was prepared chiefly for use at the recent London Exhibition. It gives an ample description of the resources of Dutch Guiana and has a number of pertinent illustrations. Anyone who is particularly interested in the subject may on application to this office have a copy of this book gratis, as long as the small quantity lasts.

THE GARDENS' BULLETIN—STRAITS SETTLEMENTS.

In the June 20 issue of "The Gardens' Bulletin," published at Singapore "as material becomes available," are grouped items of interest to the rubber industry, as well as information regarding other articles exported from the Straits. Of the nine rubber trees planted in the Botanic Gardens, Singapore, in 1877—some of

which were tapped as early as 1889. One of them, Para No. 2, which has just died, had been tapped at intervals up to January 30, 1914. It measured 10 feet, 5 inches in circumference.

Another Para rubber tree, now 28 years old, has been tapped yearly since 1896, the yield being 100 pounds in 1897, 13 pounds in 1913.

NEW TRADE PUBLICATIONS.

A NEW SERIES OF BOSTON WOVEN HOSE AND RUBBER FOLDERS.

THE Boston Woven Hose & Rubber Co. has recently issued a series of trade folders, each illustrating a particular brand of the company's well known rubber belting. Five of the trade names adopted by this company—Bison, Ram, Aurochs and Bull Dog—lend themselves very readily to purposes of illustration, a fact which has been taken due advantage of in the design of this new literature. Between the "Bison" brand for light work and the "Aurochs" for carrying heavy loads of sharp ore, the company makes a wide variety of beltings intended for general and special purposes, including the "Bay State" for use in oil fields, the "Congress" for lumber mill service, and "Service" belting for all-round purposes. The "Bull Dog," illustrated as "always looking for a hard proposition" is described as "the best we have to offer," while the "Helmet" brand is mentioned as "our best stitched belt, especially designed for hard service in wet places." This company, whose works are located at Cambridge and Plymouth, Massachusetts, has offices in ten of the principal cities of the United States—its home office being situated in Boston—and has warehouses in Chicago and Pittsburgh.

THE DERBY CALENDAR.

The Derby Rubber Co., whose factory for the reclaiming of rubber is located at Derby, Connecticut, is favoring its friends with monthly calendars especially pleasing in appearance. The August number depicts against a beautiful background of hill and sky two sportsmen in a frail canoe shooting some particularly dangerous looking rapids.

THE DOMINION.

The semi-monthly publication "The Dominion," published by the Canadian Consolidated Rubber Co., Ltd., of Montreal, Quebec, contains in interesting form accounts of the activities of that company and its associated branches, known as the Dominion Rubber System. The issue of August 1 is devoted largely to an account of the first convention of the Dominion Rubber System, held the week commencing July 20, which brought together representatives from almost every far point of the Dominion. After a helpful, instructive and inspiring three days' session in Montreal, an additional two days' convention was held in Berlin, Ontario, where the Dominion Tire Co., Ltd., is located. Each number contains also some items of general interest to the trade, that of August 15 devoting space to an article on the situation in Canadian manufactures caused by the war.

"WORK DONE"—INDUSTRIAL EDITION.

In the 50-page booklet recently issued by Westinghouse, Church, Kerr & Co., the principal feature is the record of "Work Done" by that important firm of engineers and constructors. The services rendered manufacturers have been of a varied character, from those of an advisory nature to the design, supervision and construction of entire plants, with the aid of men trained in every branch of engineering.

Supplementing these general explanations are detailed accounts (with about 50 illustrations) of the work carried out in some 15 of the many plants which have at various times availed themselves of the firm's services. These plants include half a dozen prominent rubber factories, among others the Federal Rubber Manufacturing Co., of Cudahy, Wisconsin, of which six interior views are shown.

The booklet affords a comprehensive idea of what this firm has done and is prepared to do for the guidance of manufacturers in the solution of the problems by which they are confronted as to construction and installation.

GOODRICH ROUTE BOOKS.

The Long Island Route Book, which has come to hand from the touring bureau of The B. F. Goodrich Co., Akron. These booklets are remarkably complete, including a large number of maps, showing both country districts and the principal towns on the various routes covered.

The Long Island Route Book includes, besides a



local maps, 8 maps showing in sections the coast from Brighton Beach to Easthampton, with full directions for tourists on 21 routes in various parts of Long Island. Another booklet is devoted to New England tours, covering

Portland, Boston and New York, as well as adjacent parts of New England. This booklet likewise contains a number of maps.

A third guide book, completing the eastern section, deals with New Jersey, showing 60 routes to points of interest, in many cases illustrated by maps.

Frequent reference is made to the "Road Marker Guide Posting" work of the company, which forms such a valuable feature of its utility.

Similar works to the above are now ready, embracing routes in many parts of the west, while others are in preparation. The Goodrich service is thus being arranged to cover the entire continent.

"Rules of the Road" forms an interesting and valuable adjunct to the literature lately received.

RUBBER TIRES FOR STREET CARS.

At the recent session of the Tramways Association of Great Britain in Newcastle one of the speakers suggested the introduction of rubber or some other silent material for tires to street cars.

The speaker contended that a properly designed tire for street cars would exceed the life of tires on motor buses and motor wagons, on which a life of 20,000 miles and over was common; that the wear and tear on the rails would be reduced; that the cost of maintenance would be largely eliminated, and that the corrugation problem would be solved.

The question of doing away with noise and vibration, it was contended, was a strong argument in favor of rubber tires. A higher rate of speed could also be attained, which the speaker placed at 20 miles an hour.

American wire wheels with rubber tires are beginning to compete seriously with Japanese wooden wheels for use on the better class of rickshaws in Ceylon.

Mr. Robert F. Grisar, son of Mr. Emile Grisar and grandson of Mr. Frédéric Delvaux, a member of the Chamber of Deputies, was married on July 19 to Miss Marguerite Good, of Paris.

IMPORTS OF RUBBER AND MANUFACTURES OF

IMPORTS OF CRUDE RUBBER BY COUNTRIES

EXPORTS OF AMERICAN RUBBER GOODS.

EXPORTS OF AUTOMOBILE TIRES BY COUNTRIES.

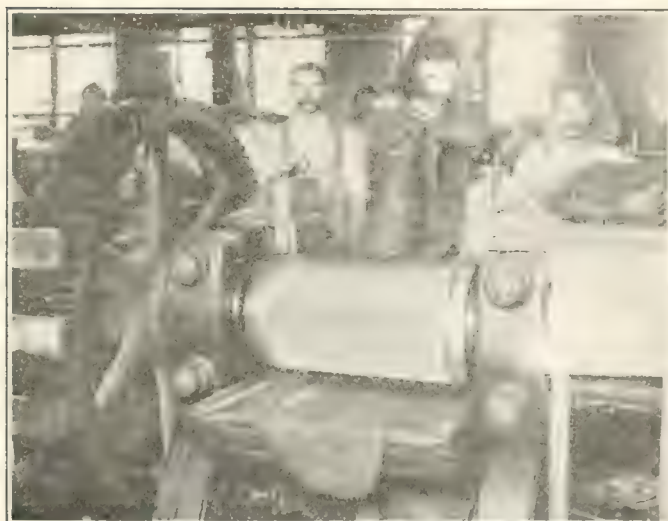
IMPORTS OF FOREIGN MERCHANDISE

COMMERCIAL NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES

SUMMARY FROM APRIL 1908 TO DECEMBER 31, 1916. PART I.—GENERAL PRINCIPLES AND POLICY.

The Story of Building a Rubber Boot.

Told BY PICTURES.

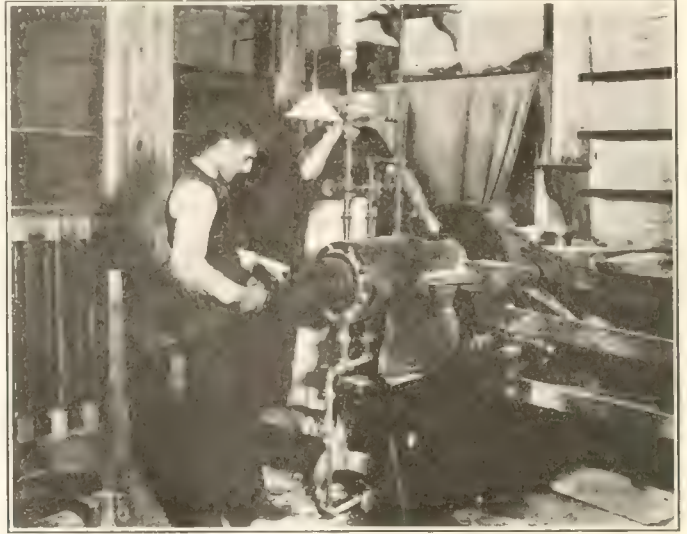


1.—CRACKING THE GUM.

2-Minimum value of f



3.—CUTTING OUT THE UPPERS.



4.—RUNNING BOOT HEEL STOCK.



5.—CURVING BOOT HEELS.



6.—PULLING ON LEG LINING.



7.—PUTTING LEG COVER OVER LINING.



8.—LAYING THE SOLE.

The Liability of Railroads for Lost or Damaged Goods.

The merchant who deals in rubber goods is not only interested in the transportation of his goods, but for all the various other ingredients that go into the construction of his goods, and also for the purchase of machinery and other equipment. So that both in buying and selling he is a constant user of the railroads and will in consequence be interested in this article on railroad liability just as much as if he were a merchant pure and simple. The jobber of rubber goods is a merchant pure and simple, and therefore the laws governing transportation are to him of vital importance; for with jobbers generally—except possibly a few in the very large cities—the railroads must be used both in getting and in distributing their stocks. What they can expect and what they can exact from the railroads, therefore, are matters of the first importance.

THE liability of railroads and other common carriers for damages for the non-delivery or the delivery in damaged condition of goods committed to their care is a subject of interest to almost every dealer, whether wholesaler or retailer. Every merchant in business uses the railroads as a means of transportation, and almost every one at one time or another will have claims against them, so that some illumination of the legal principles that control such claims may be useful.

In the beginning, the status of the merchant in making claims against a railroad company depends on the way in which he has purchased the goods. As to delivery, merchandise is usually sold in either of two ways. John Jones & Co., jobbers or manufacturers, of New York City, will take an order from James Brown, a retailer in Cincinnati, Ohio, for goods. If the goods are sold delivered in Cincinnati, freight paid, the railroad is the agent of the seller, and if anything is wrong with the shipment—if it is either not delivered at all, or delivered damaged—the buyer's claim is against the seller. In such a case he has nothing whatever to do with the railroad, and should hold the seller responsible for the loss, whatever it may be, for the contract is of course not fulfilled by the seller until the goods are properly delivered. In this case the seller has the claim against the railroad.

In my judgment, however, sales of merchandise are mostly made the other way, i. e., f. o. b. (free on board) the place of sale. In this case John Jones & Co. sell the goods at New York and it is Brown's business to get them transported to Cincinnati. Practically always in such cases, Jones & Co. will actually deliver the goods to the railroad and make all shipping arrangements. In this case the railroad is the agent of the buyer and if anything happens to the goods en route the buyer must look to the railroad. Some retailers not so fair in their business methods as they might be, will arbitrarily seek to hold the seller responsible in such cases, by deducting enough from bills to cover their loss. Even though the seller, for business reasons, should permit this, there is not the slightest legal warrant for it.

In spite of the fact that the seller of goods sold f. o. b., who delivers them to the railroad, is acting simply as the buyer's agent, it is established that the seller in the contract he makes with the railroad will usually bind the buyer. In other words, if the seller accepts from the railroad a bill of lading which contains a limitation of the railroad's liability, the buyer is bound and cannot claim that he did not consent to any such limitation.

It is by these contracts that common carriers give themselves the upper hand over shippers of merchandise and make it extremely difficult to get justice when goods are lost or destroyed. Before the days when railroads had learned how to reduce their liability the matter was controlled by the common law, and a railroad was considered an absolute insurer of goods given it to transport. In those days no ordinary excuse was accepted. If goods were lost or damaged the railroad was compelled to make good the

loss, unless it could be shown that it came from the act of God, a public enemy or the negligence of the shipper himself.

Conditions have changed, however, and today practically every railroad and common carrier uses a bill of lading which makes its liability for damage only a fraction of what it formerly was, and what it should be. Under the bill of lading now in general use a railroad can be held responsible only for damage that comes from its negligence, and upon the claimant is usually put the burden of proving the negligence. This is often a very hard thing to do. The railroads have even tried to go further and force on shippers contracts which relieved them of practically all liability, even for the results of their own negligence. In every case, however, the courts have held such contracts void as against public policy.

The acceptance of such a bill of lading by a shipper makes the contract, whether the shipper read or understood it or not.

When a merchant receives merchandise in bad order he is often compelled by the railroads to sign for it in good order before they will deliver it to him. Often he is required to do this before he has even had the chance to examine it and learn its condition. By doing so he loses none of his rights, however, for he will always be permitted to show that he was compelled to give the good-order receipt against his will. If he discovers that the goods are damaged his course is plain, but not always easy. If he has bought the goods f. o. b. and it is incumbent upon himself to make the claim against the road, he should at once file a formal claim for damages. The chance is he will never hear of this again unless he presses it. If he finds he can get nothing out of court, he can begin an action. In order to make out a *prima facie* case (a case good enough to get judgment if not overturned) he needs simply to prove the delivery of the goods to the railroad in good order and their delivery to him in bad order. It is then up to the railroad to show that by reason of the contract in the bill of lading they are not responsible. If the bill of lading relieves the road of all responsibility, except for negligence, the merchant will then have to prove the negligence in order to recover. Sometimes this is comparatively easy, sometimes almost impossible. In such cases negligence is not presumed by the simple occurrence of damage and must be shown, except where the goods are lost entirely. In that case negligence need not be proven; the loss is supposed to be due to the railroad's negligence.

The rule as to what is negligence in these cases is simple: If the railroad failed to use ordinary prudence and care, and as a result the goods were damaged, negligence is made out.

The measure of damages in case judgment is obtained is the market value of the goods at the point of destination, not the point from which they were shipped. To the market value may be added interest, and from the sum of principal and interest the freight charges are to be deducted. The above is the rule where the goods are lost. Where they are simply damaged, the measure is the market value less the fair value of the damaged goods at the point of destination. In

case of damage through unwarranted delay, the measure of damage is the difference between the market value at the point of destination on the day when delivery should have been made and the market value on the day when it was made. This whether the decline which may have occurred was due to a market decline or a deterioration of the goods themselves.

The Rubber Dealer's Paradise

THE RUBBER DEALER'S PARADISE.

Labrador—Where sealskins are gladly exchanged for rubber boots and coats.

By FRED L. KROB.

"NOTE in the papers that you are going to Labrador," a friend wrote, "and I'm presuming to make a suggestion: See if some store in your city is closing out an old stock of rubber coats, or drop in on the shoe dealers and see if they have a stock of rubber boots or shoes that they want to get rid of—soiled, out of date, or possibly factory damaged. If they have, buy it and take it along, and trade it in Labrador for furs. I know you'll be thankful for the hint."

My friend was a newspaper correspondent, whose work took him all over the globe. I knew that he had already "done" Labrador and that he knew whereof he affirmed.

I hadn't been on that ten thousand miles of peninsula very long without learning that he was right. Labrador is indeed the cod-fisherman's happy hunting ground. Some freak of nature has caused the old dame to send the cod fish to this bleak, inhospitable shore in schools of such size as to pass all reckoning. The cod from here go to supply the world, well nigh, and without them strict church people in Europe and America would be sadly put to it indeed throughout Lent. Wherefore thirty thousand odd fishermen come, every year, from Newfoundland and Nova Scotia to compete with the miserable "liveyeres"—as the settled inhabitants are termed—in taking the cod.

The Newfoundlanders live in temporary huts erected on the shores, some of which are fairly well equipped.

The simple native Labradorean, born on this coast, never leaves it except to put to sea in a fishing smack. Back from the coast rise the mountains, behind which is an unexplored region. In

to cod fishing. He has never seen a horse, has never used a cart or any form of wheeled vehicle. When he has enough fish they are cured and barreled, and in the fall some "planter" will come up to find him and buy what he has, or rather, barter (for money is to little purpose there); and the man is content.

In the winter he traps and gets beautiful skins, but he knows little of values, so he devotes these to his family needs first, storing what is left till he gets a load, when he goes by dog-team across the frozen fiords to the nearest Hudson Bay trading post. There he arranges for barter, and always gets the worst of it. He has many wants to be filled—powder, ammunition, guns. He needs baking powder, spices, groceries—things that don't abound in Labrador. He wants garments; but most of all he wants a good stout "slicker," as he calls a rubber coat—and he eyes the wonderful rubber boots the company is prepared to trade him. What he would say to the regular fishing boot, with



LABRADOR CHILIKEN WEAR SEAL-SKIN BOOTS

the stiff lower leg and the pliable upper part, in which a man can go to his waist in water and be dry, it is interesting to speculate.

That no one has as yet come up here with a boat load of rubber goods of substantial and serviceable description is a wonder. Seal-skin coats, taken and cured as only a trapper can cure them, would be nothing to the native compared with a rubber coat. He knows how the waves dash over the punt when he rides out to the cod-trap; he knows how rheumatism comes on, as a result of years of such exposure, and he envies the happy Newfoundlanders who have coats, hats and boots of rubber. Of course he hasn't money, but he can barter. If you prefer fish, which you can sell the "planter" or his agent, well and good. If you want furs you can come to conclusions even quicker. He knows furs are the more valuable, but he knows, too, that for him they are easy to get. He knows that in the winter those rubber boots would be extremely handy. He knows the supreme comfort of that rubber coat; and when the chance comes to get one he takes it. He will trade what he has for it and believes he has got by far the best of the bargain.

Some day when I get time I will buy up all the second grade rubber goods I can and set sail for Labrador. Until then, any enterprising dealer is welcome to the suggestion. But perhaps even now some commercial adventurer is planning an invasion of this rubber-man's paradise. Who knows?

MANY AKRON-WILLIAMS TIRE REPAIR VULCANIZERS IN USE.

The sales manager of the Williams Foundry & Machine Co., of Akron, states that thirty tire manufacturers, including practically all the leading tire makers in the United States, are using the Akron-Williams tire repair vulcanizers in their factories, branches and service stations. The Ford Motor Co. recently ordered fourteen A-W plants for their accessory stations.



the winter the native traps a bit in this unknown country, but never farther than points he can see from those coast mountains as he crosses their ridge to come down on the landward side. In the spring he kills the seal on the ice; in the summer he takes

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

ON account of the fluctuation in the price of rubber, uncertainty in the money market and in regard to the demand for rubber goods, quotations have been advanced in many lines, some of the factories raising the price of various goods from five to twenty-five per cent. Several companies have made no advance at all in their prices, and some of the advances made have already been rescinded, so that the impression prevails that within a few weeks prices will be almost normal, not only for the finished product but also for the various raw materials which are received from abroad. It is my belief that most of the Akron factories have a sufficient stock of rubber goods on hand, and also a sufficient supply of raw materials, to run them several months, so that the general market in rubber goods should not be greatly affected, and that as soon as the money market and shipping become regular prices will be lower. I am informed that the shipping of rubber into this country was not stopped except when exchange between this and European countries rose to prohibitive rates. Akron men have said that if the shipments cannot be taken care of they will make an effort to charter their own boats to bring in Brazilian and plantation rubber.

H. S. Firestone says: "A sharp turn of war conditions may quickly relieve the present tie-up of navigation and permit crude rubber shipments to reach us. Here are the facts: Over 60 per cent. of the crude rubber used in the United States comes from the Far East, via the Red Sea and the Mediterranean. No merchant ships are passing through these seas now, and we don't know when they will start, surely not for a while. Shippers could divert the shipments via the Pacific Ocean to our western coast, but this change would require time and we have no word that such a course is under advisement.

"Being shut off from the East, we must look to South America for our supply. Here we find only a few hundred tons in stock, because the Brazilian district has a steady market for all they make during their open season. Just now that country is flooded with torrential rains and the gathering of crude rubber cannot start until October. So we find but little immediate relief there.

"When shipments start to come in from the East, crude rubber prices will probably decline sharply, although it has been reported unofficially that when navigation stopped the plantation owners laid off their men and ceased tapping the trees. This of course would mean a shortage of rubber, but it is my personal opinion that transportation is the main difficulty and that as soon as navigation opens we will find plenty of rubber to supply this country."

* * *

The Adamson Machine Co. is making a large addition to its foundry, and installing machinery in the recent addition to its machine shop, giving improved facilities for heavy work. The plant is exceptionally busy, running day and night.

The B. F. Goodrich Co., for the first six months of 1914, after making proper allowances for maintenance, depreciation and all outstanding liabilities, showed a net profit of \$2,651,200. This, added to December surplus, after deducting the regular April and July dividends on preferred stock, shows undivided profits of \$2,307,200. From this the company has appropriated sufficient funds to retire nine hundred thousand dollars par value of preferred stock.

This period's gain of quick assets over current liabilities amounts to \$1,628,500. Net profits for the first half of 1914 were greater than for the fiscal year of 1913.

B. G. Work, president of the Goodrich company, who, with his family, has been in Germany, and was marooned by the war, has cabled home assurances of their safety.

It is reported that this company's plant in France, on account of the increased need of tires occasioned by the European war, is running day and night to its utmost capacity.

* * *

The Firestone reclaiming plant is practically completed, and the company is building another addition to its main building.

* * *

The Miller Tire & Rubber Co. has commenced to tear down part of the buildings of the Frantz Body Works and expects to replace them with new ones.

* * *

The Marathon Tire & Rubber Co., which has had an exceptional year, is building an addition to its factory and store buildings at Cuyahoga Falls.

The Kelly-Springfield Tire Co. has just completed equipment of its new factory building, and the whole factory is running full force.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

AS elsewhere, the rubber trade has been in a very unsettled condition for the past month. The flurry in rubber costs was one factor, and the general uncertainty regarding money rates, foreign exchange and delivery of supplies, added to sudden business depression all along the line, made the first two weeks in August rather exciting ones. Prices of about everything made wholly or partly of rubber were advanced, but at last reports most of these lines were settling back nearly or quite to old rates.

The tire situation was presumably the same here as elsewhere. Prices were advanced ten per cent. by all makers. Some houses allowed their favored customers to cover immediate needs at old prices, while others held rigidly to the advance. As a consequence those first two weeks in August were lively ones, with more than one factory reporting the biggest business in their history.

The sundries manufacturers advanced prices twenty per cent., which had the effect of narrowing trade down to immediate needs of their customers. Along about the twentieth, however, half of the advance was lopped off, though this helped trade but little.

The clothing men are uncertain how their trade will be affected. Most of them have large orders. Those who use imported fabrics are by no means certain they will get the goods they have already ordered, and they are likely to pay pretty high rates to insure delivery. While this may work to their disadvantage, the same causes may prevent the receipt of imported garments and thus by removing competition make a better demand for the finer lines.

In boots and shoes, no advance was made in either terms or prices. The possibility that such action might be taken later, however, caused a rush of orders. The factories, which had closed for the regular summer shut-down for repairs and inventory, are now running, and most of them with enough business to keep them going for eight or ten weeks, and stock enough to enable them to do so.

* * *

The Forsyth Dental Infirmary, which has previously been described in these pages, is expected to be opened for its philanthropic work early next month, and will have a proper setting worthy of the beauty of the building, and what might have been a controversy has been amicably settled. Incidentally, a further evidence is shown of the way money made in the rubber business is donated for the benefit of humanity. A large plot of ground belonging to Ex-Governor Foss, if built up in apartment houses, would hide the frontage and obscure

at \$140,000. Mr. Foss was willing to sell at what the land originally cost him, and the taxes and interest since its purchase, in all \$108,000. This Mayor Curley was unwilling to pay, and he ordered the seizure of the land by right of eminent domain, the award to be not over \$125,000. Before proper legislation to this end was passed, however, the mayor sent a substitute order to the council to buy the land at the assessed value, to which the ex-governor agreed.

Then a surprise was the giving to the city of a piece of property adjoining the Foss land and the infirmary. This plot, with apartment houses upon it, the property of Elizabeth Glendower Evans, is assessed at \$48,000. By agreement between Mrs. Evans and Mr. Thomas Forsyth, the apartment houses will be razed, and the land be turned over to the city for park purposes at no expense to the city. This is a most substantial addition to the individual donations for the benefit of humanity by these practical philanthropists.

* * *

The selling agents and traveling salesmen of the Revere Rubber Co. were congregated in Boston the middle of the month, when a four days' business convention was held at the Copley-Plaza Hotel, and plans were mapped out for the coming season's campaign. Some eighty or more salesmen were in attendance at the business conferences, and a much larger number, including several of the officers of the company, were present at the banquet given as a wind-up to the convention. One day was spent in thoroughly inspecting the factory at Chelsea, where the salesmen were given every opportunity of familiarizing themselves with the manufacture of the goods.

Mention was made last month of the remarkable mat exhibited by the Revere Rubber Co. at the Shoe and Leather Market Fair in this city. The mat was composed of a great number of Spring Step rubber heels, and a prize was offered for the nearest guess to the exact number. Naturally this created much interest, and over 1,500 people sent in their guesses or estimates, and these estimates ran from 700 up to 71,000. The exact number was 6,002 heels. The nearest guesses were both made by shoe salesmen, William F. Nye, southern salesman for the Whitcomb Shoe Co., of Haverhill, and Gordon P. Eager, of Rice & Hutchins. Each guessed 6,001 heels. Under these circumstances the Revere Rubber Co. decided to split the first and second prizes, and sent to each a twenty-dollar gold piece, with a congratulatory letter.

The Rhody Boot Co., of Providence, manufacturers of leather sole rubber boots and overshoes, will move their business to Rockland, Massachusetts, about the first of September, having secured the factory on North Union street formerly occupied by the Burdette Co. This company is a Rhode Island corporation, with an authorized capital of \$50,000. The name will be changed to The South Shore Shoe Co. Its specialties in rubber boots and overshoes have a rubber upper, a vulcanized rubber welt-sole, and an oak or chrome leather outsole sewed by the Goodyear welt process. This enables the boot to be resoled, thus insuring it a much longer life. Besides these specialties, the company will add lines of athletic, outing and school shoes.

Just as a curiosity, I send you a small advertisement clipped from a Portland, Maine, daily paper. It reads:

FOR THE GROWING RUBBER INDUSTRY IN THE STATE OF MAINE.

The connection between coupons, tags, green stamps and worn-out rubbers seems rather remote. Premiums for scrap rubber, however, may be popular way down east.

* * *

The Danversport Rubber Co. at a recent meeting elected Frederick Barlow president, and A. Barlow treasurer. Mr. A. Barlow, who was the founder of the business, has his office

at 79 Milk street. J. W. Kumph is superintendent of the mill at Danversport, where an extensive reclaiming plant is located.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE rubber companies throughout this state are finding that the European situation has caused them more inconvenience than it has caused any other industry, these concerns being among the first to report any ill effects from the Continental war. Most of the local plants have been doing a good business and have found ready sale for their products, which consist of nearly everything that is made of rubber. The great difficulty being experienced by the companies is to secure the necessary supply of crude rubber to conduct their operations.

The Revere Rubber Co., Valley street, Providence, which is owned by the United States Tire Co., posted the following notice on August 6: "Owing to conditions caused by the European situation, which make it difficult for us to get our principal crude material, we are temporarily curtailing our production." The company has been running double time for more than a year, manufacturing automobile tires and rubber thread. The night shift finished out that week and was then stopped, according to Harlow Waite, the general manager of the plant. The day shift has been gradually reduced throughout the works and will be continued on a curtailed schedule until the situation clears, with the possibility, if crude rubber continues to be tied up, of the plant closing entirely.

* * *

The American Wringer Co., of Woonsocket, beginning August 7, went on a five-days schedule in the rubber department, and it is expected to make a general curtailment within a comparatively short time. This step was taken, it was said, on account of the effect of the European war on export trade. By this order approximately 125 men are affected. The concern has a large quantity of rubber on hand, but, it is pointed out, it cannot afford to use it all up in a few months, not knowing how long it may be before it can replenish. The American Wringer Co. does a big export business with Germany and England, besides shipping goods to all parts of the world. To fill immediate orders the company will draw from its surplus stock. If any changes are made necessary along curtailment lines, an announcement to that effect will be made by the company.

* * *

The Bourn Rubber Co., Warren street, which has been having a large run on tennis shoes this year, reports that it has on hand a sufficient stock of crude rubber to last several months.

* * *

LeBaron C. Colt, of Bristol, vice-president of the National India Rubber Co., takes an optimistic view of the situation and in an interview a few days ago said that there was no expectation of the company going short of crude rubber on account of the European war. There is an ample supply, he said, and the possibility of interference with the sources of supply is extremely remote. Mr. Colt stated that the rubber interests anticipated no serious trouble whatever, giving his reasons for this by adding that there are several large supplies of stored rubber in this country, one of which is at the plant of the National India Rubber Co., at Bristol, a quantity sufficient for many months.

Mr. Colt then referred to the great stores of crude material provided by the United States Rubber Co., the parent corporation, which looks after such matters years in advance. But the most important factor of all is the great rubber producing center of Ceylon. Referring to this Mr. Colt says that inasmuch as Ceylon is a British possession, and England being expected to maintain her prestige on the seas, matters in Ceylon will remain undisturbed and the production and distribution of crude rubber will go on without interruption as it has in the past.

* * *

At the Alice and Millville mills of the Woonsocket Rubber

Co. work was resumed on Wednesday, July 29, the plants operating on full time with a nearly full complement. The former employs approximately 1,500 and the Millville plant about 600 hands. It is expected that there will be fairly steady work during the fall and winter, as stocks throughout the country are low and orders are being received in considerable volume.

The Alice mill closed down June 20 and the Millville plant on June 30, for summer shutdown and for repairs to improvements to the machinery. The management had hoped that conditions would be in such shape that work could be resumed by July 24, but delays caused the reopening to be put off until the later date. Five new magnetic safety clutches were installed during the shut-down at the Alice mill.

The creditors of the Walpole Tire & Rubber Co. early in the month received a third dividend of four per cent. through a decree entered in the United States District Court at Boston by Judge Dodge. This dividend released about \$50,000 to the creditors, making a total of 12 per cent. which they have received from the estate to date. The suspended Atlantic National Bank of this city is one of the large creditors of the defunct company. The Walpole Tire & Rubber Co. was the owner of the Consumers' Rubber Co., of Bristol, which concern is in the hands of Robert A. Emerson, receiver.

The auction sale of the Walpole Tire & Rubber Co., which was to have taken place on August 12, has been indefinitely postponed by order of Federal Judge Dodge, owing to unfavorable financial conditions resulting from the European war. A hearing will be given on September 8, when another date may be set for the sale.

The factory of the National India Rubber Co. at Bristol is increasing its production as the season advances, and large shipments are being made to different parts of the world, including points in Australia, Japan, the Argentine Republic, Brazil and many places in the West and Middle West. The department for the production of lawn tennis shoes is booming, the present daily output being more than 20,000 pairs. The other departments of the plant, especially those devoted to arctics and gum shoes, are also busy.

The output of rubber shoes is steadily increasing. Recently 250 cases of rubber shoes were shipped from the Bristol factory to São Paulo, Brazil, and another lot almost as large was shipped to Buenos Aires, Argentine Republic. There was also a shipment of rubber shoes from the National company early in the month to Sydney, New South Wales, by way of the Pacific Coast, the lot consisting of twenty-one cases. This department employs a large force and new hands are being engaged to keep up with the orders.

Insulated wire of different sizes is also being shipped in large quantities. One shipment to Chicago recently contained 36,700 pounds. Reels of insulated wire weighing six tons were shipped to Lancaster, New York. This company supplied a considerable quantity of this wire to the Panama Canal.

The Bourn Rubber Co., of Providence, is well established in the new quarters secured to take the place of the factory destroyed by fire a few months ago. The building now occupied is 200 feet long and approximately 50 feet wide, its capacity being more than double that of the old plant. This company, which within a month from the time of the fire was turning out 80 per cent. of the new capacity, is running full on ten hours per day.

Samuel Norris, secretary of the United States Rubber Co., who is spending the summer at Bristol, accompanied by Mrs. Norris, sailed from New York on July 25 on the steamship "Caledonia" for a visit of several weeks in Scotland.

THE RUBBER TRADE IN CHICAGO.

By Leonard W. Thompson.

THE conditions in the local rubber trade, which were greatly disturbed by the sudden declaration of war in Europe and the beginning of the international conflict, became more settled as the month drew to a close. With all importation threatened in a serious manner, trade and banking circles of this city were in a state bordering on panic for a number of days. Within a short time, however, the situation cleared, and conditions are now normal again.

The trade here is optimistic. The concerns report an excellent business during the past month. A number of big meets have been held, including one at Elgin, and Chicago automobile enthusiasts, taking advantage of the good road conditions, have journeyed down to the nearby town to see the event.

Belting manufacturers report greater sales for the month than during the corresponding period of last year, with the market for packings equally favorable, while the extent of building operations in this middle western section promises a large demand in mechanical lines. The demand for hose has been normal.

* * *

A new belting concern is soon to enter the local field. It has been incorporated under the name of the McCauley Belting Co., with a capital stock of \$10,000, the incorporators being James J. McCauley, S. D. Fink and J. P. Grier, all experienced rubber men well acquainted with the trade in Chicago and vicinity. It is understood that the new firm will locate in the wholesale district, opening within a few weeks, handling not only belting, but a general line of mechanical rubber goods, packings, etc.

NEW MEMBERS OF THE RUBBER CLUB

At the last meeting of the executive committee of the Rubber Club of America several new members were elected, as follows: Firm members—Mansfield Tire & Rubber Co., Mansfield, Ohio, G. W. Henne, representative; Charles E. Wood, 24 Stone street, New York (Transfer of associate membership). Active members—Albert F. Thalheimer, of the United States Rubber Reclaiming Co., Inc., 30 East Forty-second street, New York; George E. Goodwin, of the United States Rubber Co., 140 Essex street, Boston. Associate members—Raymond E. Drake, of the Avon Sole Co., Avon, Massachusetts; Robert J. Wilkie, Kimball Building, Boston; George W. Martin, of the Jenckes Spinning Co., Pawtucket, Rhode Island; A. Boyd Cornell, of the Empire Rubber & Tire Co., Trenton, New Jersey.

LIQUIDATION OF THE KORBIT COMPANY.

By the decision of the referee in bankruptcy, the creditors of the Kornit Manufacturing Co., against which a petition in involuntary bankruptcy was filed in Newark in August, 1909, will receive only \$3,561.03 of the assets of that company, \$6,000 of the \$9,561.03 salvage going to the company's counsel. This company, as will doubtless be recalled, was incorporated in 1904 under the laws of the State of New Jersey with a capital stock of \$500,000, to manufacture an insulating material and hard rubber substitute from the horns and hoofs of cattle. Quarters were secured in Belleville, New Jersey, and a small amount of the product, known as "Kornit," was produced, but a fire destroyed the premises on March 1, 1907, terminating production. The investors, who had put large sums into the enterprise, becoming suspicious, an investigation was instituted which led to the conviction of the principals in the promotion of the company—Charles E. Ellis, president, and Edwin R. Graves, vice-president—on a charge of using the mails with intent to defraud, and both were sentenced to three years in the Federal prison at Atlanta, their terms commencing November 2, 1910.

The Obituary Record.

DEATH OF THE OLDEST RUBBER WORKER IN THE UNITED STATES.

On the morning of July 28 occurred the death of Mr. Frank de Frate, at Tuckahoe, New York, a man who had enjoyed the distinction for some time of being the oldest rubber worker in the United States and probably, at the time of his death, in the world. He was well along in his 90th year, and for 68 years, with the exception of a few months in the middle of the last century, he had been continuously employed in connection with the Hodgman Rubber Co. He was born in Schoharie, New York, December 23, 1824, and learned the hatter's trade, but when he was 22—in 1846—he became associated with Daniel Hodgman, who then had a rubber factory on Duane street, New York. When, in 1851, this factory was moved to Tuckahoe, Mr. de Frate went with his employer, and with the exception of the few months mentioned above had been continuously and actively at work in the Hodgman factory ever since.

In his younger days he was a man of tremendous physical strength, which fact, in addition to his exemplary habits, accounted for his continued activity in his extreme age. About 12 years ago the officers of the Hodgman company proposed to Mr. de Frate that he should retire on a pension, but he objected strenuously and stated that he wanted no remuneration except for work actually done, so he was permitted to continue, but was allowed to come and go as he chose. He went to the factory regularly and did such work as was assigned him up to two days before his death.

It occasionally happens in the manufacturing plants in Eng-



FRANK DE FRATE.

land and on the Continent that an employe runs past the 50-year mark, but in the history of American manufacture it certainly is a unique incident where a man is actively associated with a manufacturing company for nearly 70 years.

MR. VAN VLIET LEFT OVER \$100,000

The late Clinton Van Vliet, president of Goodyear's India Rubber Selling Co., who died in Flushing, Long Island, on February 6, left an estate valued at \$121,258.81, nearly all of it in stocks and bonds. The entire estate was left to his widow.

EDWIN S. MORRIS.

Edwin S. Morris, treasurer of Mulconroy Co., of Philadelphia, died suddenly at his home in Oak Lane, Pennsylvania, on August 8. He was born in Pughtown, Chester County, Pennsylvania, January 1, 1880. At the outbreak of the Spanish-American war, though he was but 18 years of age, he enlisted in the



EDWIN S. MORRIS.

First Regiment Heavy Artillery and was assigned to the coast defense, being stationed at Fort St. Philip, at the mouth of the Mississippi River. At the close of the war he was honorably discharged and then entered a business college in Norristown, Pennsylvania, where he completed the regular course. He then became associated with the Mulconroy Co., and during the last nine years of his connection with the company he acted as its treasurer.

Though a young man, he was widely and most favorably known in the rubber manufacturing trade. In addition to his business activities, he was very prominent in masonic circles and also a member of the Order of Independent Americans and the Independent Order of Odd Fellows. He was a trustee in the Oak Lane Baptist Church and interested in work of that institution.

SUICIDE CAUSED BY A GOLF BALL.

Pain from an injury caused by a golf ball, which rebounded from a stone wall and struck him in the eye, and worry over the probable loss of sight as a result of this accident, is believed to have been the cause of the suicide of Austin Hall Ruggles Watson, 72 years old, a prominent New York banker and former merchant. The accident occurred about six weeks ago, on the golf links near his home at Beacon, New York, and the pain, which for three weeks rendered sleep impossible, is supposed to have driven him insane.

John C. Connery, foreman of the wire department of the National India Rubber Co., at Bristol, died at his home at Bristol Neck on August 19, of heart disease, from which he had suffered for several months. He was a native of Bristol and a member of a number of local organizations, including the Modern Woodmen of America and the Engine and Hose company. He was 33 years of age and is survived by his wife and two children.

News of the American Rubber Trade.

DELEGATES TO THE CONVENTION OF THE DOMINION RUBBER SYSTEM.

The Dominion Rubber System is the name given to the Canadian Consolidated Rubber Co., Limited, and its associated companies. A few days ago, from July 21 to 25, the session of the convention was held in Montreal and the last two in Montreal, to which delegates were sent from the various

THE STANDARD EMAREX CO. OF CHICAGO.

Mr. George W. Watkinson has sent out a notice under date of September 1 of the incorporation of the Standard "Emarex" Co., with offices at 208 South LaSalle street, Chicago, to take over the "Emarex" business of the Standard Asphalt & Rubber Co. This was done as it was thought desirable to separate this particular business from the other lines in which the latter company is interested.



DELEGATES TO THE DOMINION RUBBER SYSTEM CONVENTION.

terests controlled by the company. Here is a photograph of the major part of these delegates, taken on the steps of the Country Club house, at St. Lambert, a Montreal suburb, whither they went to attend a banquet. The serious aspect of most of the faces in the group is not to be attributed to any disinclination on their part to accommodate the photographer, but rather to the fact that while they were being photographed the banquet was waiting.

The convention, for the most part devoted to business discussions—with the social activities merely incidental—was unanimously voted a great success, and is likely to be repeated from year to year.

NEW YORK RUBBER IMPORTERS TO ORGANIZE.

The rubber importers of New York are taking steps to effect an organization which will be for their mutual benefit. An initial meeting was held on August 12 at the office of Ed. Maurer Co., Inc., when 20 members of the importing trade were present. A second meeting was held at the same place two days later, with an attendance of 28 representatives of importing houses. Five of the number present, namely—Ed. Maurer, W. E. Bruyn, F. L. Henderson, W. T. Baird and W. H. Stiles, were elected as a committee to outline a plan for the proposed association.

RUBBER COMPANY DIVIDEND.

The Plymouth Rubber Co., of Canton, Massachusetts, has declared a quarterly dividend of 13½ per cent. on its preferred stock, payable September 1 to stockholders of record on August 24.

ALDEN'S SUCCESSORS, LTD.

Alden's Successors, Ltd., formed early in May to take over the London and Liverpool business formerly conducted by A. H. Alden & Co., Ltd., importers and merchants, as well as to control the business of Adelbert H. Alden, Ltd., of Pará and Manáos, have established a branch office at 290 Broadway, New York, to import and deal in crude rubber in the United States and Canada, and have appointed Mr. Frederick W. Dunbar of that address their attorney in fact and manager.

GOODRICH FIRE HOSE USED FOR FIFTEEN YEARS.

A quantity of Goodrich hose purchased in 1899 by a large city in the middle west for its fire department, and which has been in constant service since that time, has recently been turned over to the street cleaners for use in sprinkling the streets—in which department it is giving equally efficient service.

RUBBER COMPANIES AND SAVINGS BANKS LIFE INSURANCE.

The rubber industry of Massachusetts has taken a great interest in the movement to furnish life insurance at cost for the working people. Agencies have been established by the following rubber companies in that state: Tyer Rubber Co., Andover; Hood Rubber Co., Watertown; Revere Rubber Co., Chelsea; Boston Woven Hose & Rubber Co., Cambridge; American Rubber Co., Cambridge, and Boston Rubber Shoe Co., Malden.

These companies collect the premiums for their employes and forward them without expense to the insurance departments of the savings banks.

HENRY J. DOUGHTY.

Henry J. Doughty, active, genial and vigorous, still invents machinery to solve the problems which vex the rubber manufacturers. This well known inventor's career began 65 years ago, in Topsham, Maine. His first job was that of blacksmith's helper. After six months of this he went to Ashland, Massachusetts, to learn the business of shoe-last making. From there he went to Worcester, and a year later became in a measure a rubber man by joining the forces of the Cox Last Works in Malden. He was with this concern nearly twenty years before he was discovered by Joseph Banigan, who induced him to come to Providence to design and build machinery for the manufacture of shoes. This was perfected in 1886, and was



HENRY J. DOUGHTY.

the well-known "Marvel" shoe. At the same time Mr. Doughty invented the ingenious presses that made and vulcanized the miniature rubber boots and shoes.

Later he invented a quick-curing press, a collapsible tread press and a tube-making machine—all for bicycle tires. These machines—that is, those adapted for double tube tires and inner tubes—were purchased by the English Dunlop company, and are still used in their factories. He has invented also a number of remarkable machines in the rubber footwear line.

At the present time Mr. Doughty is the active head of the Doughty Tire Co., and is hard at work on machinery connected with the motor tire industry. Indeed this machinery is practically perfected. It consists of a loom that weaves a special fabric in strips with heavy selvedge and open center. This is passed through a new type of friction calender, and poured hot round the tire core. At the same time wire is wound into the bead and the bead finished. The tread strip is then added. The making of the carcass in this way takes five minutes. For curing, a new type of collapsible head vulcanizing press is a part of the Doughty process. This, through its heated platens and its heated cores inside of the carcass, completes the cure in 25 minutes. Tires made by this process have been severely tested and found to be perfectly reliable in all respects.

matter Mr. Doughty has formed the Doughty Tire Co., in which he holds a controlling interest. The foreign rights are in the hands of a prominent European rubber machinery company.

PERSONAL MENTION.

Mr. Clarence H. Loewenthal, secretary of the United States Rubber Reclaiming Co., of New York, who attended the recent London Rubber Show in London, has returned from England, arriving in New York on the "Celtic" on August 15. Mr. L. J. Plumb, chief chemist of this company, at last report was marooned in Berlin.

Mr. Arthur W. Townsend, who was mentioned in the August issue of THE INDIA RUBBER WORLD as having recently started on a tour around the globe, decided, because of the uncertain conditions in the East, to cut his trip short. He is now on his return journey across the Pacific, on the steamship "China," and will arrive at San Francisco September 6.

J. H. Ficken, formerly New York City sales representative of the United States Tire Co., has become associated with the Kelly-Springfield Tire Co.

Charles Hieneman, who several months ago was sent to Mexico by the Fisk Rubber Co., has recently returned to Los Angeles after three months' war service as general overseer of the motor car brigade of the Villa forces, with the title of sergeant, having been influenced by the flattering offer of salary—paid regularly in American gold—to undertake this work.

MR. LAIGHTON LEAVES THE APSLEY COMPANY.

Mr. William B. Loughton, who has been associated with the Apsley Rubber Co. for the last fourteen years—during the latter part of that time as treasurer and director—has recently resigned from his connection with that company. Before going with the Apsley company Mr. Loughton was selling agent for the Candee Rubber Co. for a number of years. His experience with these two companies has given him a knowledge of rubber footwear making and selling that very few men possess.

VICE-PRESIDENT MARSHALL IN HIS AUTOMOBILE.

The motor car is becoming more and more a valuable adjunct in the nation's affairs, facilitating the activities of the country's executives while adding to their comfort and convenience. We reproduce herewith a photograph showing Vice-



VICE-PRESIDENT MARSHALL.

President Marshall in his big car, which is one of the familiar sights of the Washington boulevards. This picture was taken by a Firestone tire enthusiast, the car being equipped with tires of that make.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

FRANCIS H. APPLETON, JR.

Few men in the rubber trade have accomplished more in their own chosen line than Francis H. Appleton, Jr., the secretary-treasurer of the well-known rubber reclaiming concern of F. H. Appleton & Son, Inc., of Boston and Franklin, Massachusetts.

Mr. Appleton is the son of Francis H. Appleton and Ida Cook Appleton, the latter a daughter of Martin Cook, of the old firm of W. H. Jackson & Co., manufacturers of grates and fenders, of New York City. Born in 1875 in Union Square, young Appleton was educated at Trinity School, and later took a very thorough technical course under private tutorship.

When his father started reclaiming rubber from scrap in 1898, young Appleton went into the factory. Being naturally an investigator, with a good knowledge of chemistry and mechanics,

is exceedingly proud. Mr. Appleton is a man of many attractive qualities, which have made him a host of friends both in and out of the rubber trade. He has been a member of the Rubber Club of America since 1905. He stands high in masonic circles, being Deputy High Priest in his district. He is also a member of the Ancient and Honorable Artillery, of which his father is an ex-commander. When that company went to London two years ago, and, as guests of the parent company, were received by King George V, three of the company bore the name of Francis H. Appleton, father, son and grandson. The latter, then eight years old, marching with the elders, clad in his Boy Scout suit of khaki, created much favorable comment and newspaper praise for his youthful, soldierlike bearing, an inheritance from his forebears.

AS TO RUBBER CARGOES AFOAT WHEN THE WAR BROKE OUT.

The secretary of the Rubber Club issued a circular letter on August 8 to the firm members of the club inviting them to co-operate with representative members of other industries in appealing to their respective senators and representatives to take up with the State Department the matter of getting exemption for cargoes of raw material (the members of this club of course being particularly interested in rubber cargoes) that might be afloat in ships that left their ports before the declaration of war.

As the State Department received a vast number of requests for information on the subject of contraband cargoes as affected by the President's declaration of neutrality, the solicitor of the department, Mr. Johnson, prepared a statement for general distribution. This statement shows that contraband articles may be shipped but that they will be shipped at the owner's risk. Mr. Johnson continues:

"Vessels flying the flag of one of the belligerents are subject to seizure and confiscation by the opposing belligerents. Contraband of war on board such vessels is, of course, subject to confiscation, though the property is neutral.

"Goods not contraband, belonging to a neutral aboard a captured vessel, are subject to delay and interruption consequent upon the seizure of the vessel, but not to confiscation, upon manifestation of neutral ownership and the non-contraband character of the goods."

THE ANNOUNCEMENT OF THE RUBBER CLUB.

On August 11 the secretary of the Rubber Club sent out an official announcement from the club to a number of the leading papers of the country as to the condition of the crude rubber market and also of manufactures as affected by the outbreak of hostilities in Europe.

THE FIFTEENTH YEAR BOOK OF THE RUBBER CLUB.

The fifteenth year book of the Rubber Club of America, for the current year, just issued by the secretary, is a much more pretentious book than the club has hitherto prepared for its members. The present issue is a book of 48 pages, size 6x9, with 2 photographic inserts. It gives the present officers and directors and members of the standing committees; the proceedings of the last annual meeting, held in Boston in April, and the reports of the president, treasurer and secretary, submitted at that time. A new and interesting feature of the book is a historical sketch of the club and its predecessor, the New England Rubber Club. The year book also contains the articles of association, the charter granted by the State of Massachusetts, the officers of the club since its organization, its constitution and revised by-laws and a list of its members; showing that it has at present 3 honorary, 68 firm, 209 active and 58 associate members—a total membership of 338.

The two inserts consist of reproductions of the photographs of the club group at the annual midsummer outing in July, 1913, and of the annual midwinter dinner held in New York last January.



FRANCIS H. APPLETON, JR.

he took upon himself the task of improving the output of the works, so that the stock would come out cleaner, and therefore be more marketable. His success was complete, and the material became so superior that the trade quickly absorbed the entire output.

After having succeeded with scrap boots and shoes, Mr. Appleton turned his attention to the reclaiming of mechanical scrap, and the result of a year's investigation and experiment was the working out of a process for reclaiming all kinds of mechanical stuff, and carloads of the waste from different factories were taken, from which was extracted a fine quality of workable rubber. He was the pioneer in this restoration, as he was also, later, in producing a high-grade rubber from worn automobile tires.

Mr. Appleton has proved himself thorough in investigation, apt in invention and most resourceful. He succeeded in giving to the rubber trade a high-grade stock which has always been marketable at a price commensurate with its quality.

Mr. Appleton resides in Franklin, where the factory is situated. He married Miss Carrie Goodwin, and there is one son, Francis H. Appleton, third, a name of which the little fellow

NEW INCORPORATIONS.

Apsley Rubber Co., July 20, 1914; under the laws of Illinois; authorized capital, \$100,000. Incorporators: L. D. Apsley (president), Pleasant street, and Milton T. Bailey (secretary), 55 Cottage street—both of Hudson, Massachusetts. To purchase the necessary materials to manufacture all kinds of goods, fabrics, merchandise—including boots, shoes, sandals, made in part or wholly of rubber—manufacturing, selling and exchanging same.

Atlas Tire & Rubber Co., The, June 26, 1914; under the laws of Ohio; authorized capital, \$5,000. Incorporators: J. M. Bernstein, E. E. Gross, E. J. Bokor, F. Allen and J. M. Ulmer. To deal in tires, rubber goods and auto. supplies.

Day Tire Protector Co., July 24, 1914; under the laws of Delaware; authorized capital, \$100,000. Incorporators: F. R. Hantsell, Philadelphia, Pennsylvania, and Geo. H. B. Martin and E. T. Vennel—both of Camden, New Jersey. To manufacture, buy, sell, trade, deal in and with automobile tires, parts and accessories.

Gordon Rubber Co., August 4, 1914; under the laws of Massachusetts; authorized capital, \$10,000. Incorporators: Louis Hahn, president, 121 Chambers street, Boston; Mark Baron, secretary, 7 Poplar street, and William M. Gordon, treasurer, 18 Arlington street—both of Chelsea—all in Massachusetts. To manufacture reclaimed rubber, rubber disc washers and rubber bands. The principal office and factory are located at 31-35 Broadway, Chelsea, Massachusetts.

Gould Commercial Co., July 14, 1914; under the laws of Delaware; authorized capital, \$225,000. Incorporators: F. D. Buck, Geo. W. Dillman and M. L. Horty—all of Wilmington, Delaware. To export, import and generally deal in merchandise of every class and description.

Harris-Henderson Tire Co., June 20, 1914; under the laws of Ohio; authorized capital, \$5,000. Incorporators: J. A. Harris, F. A. Henderson, John C. Barkley, Raymond L. McVean and John P. Dempsey. Location of principal office, Cleveland, Ohio. To buy and sell tires, etc.

King Tire Protector Co., July 13, 1914; under the laws of Maine; authorized capital, \$500,000. Frank L. Farrington, president, Augusta, Maine. To deal in tires, automobiles and all kinds of automobile equipments.

Kingstone Tire & Rubber Co., Inc., July 31, 1914; under the laws of New York; authorized capital, \$2,000. Incorporators: Sydney Bernheim, 305 West Seventy-second street, New York, New York; Catherine Weldon, 591 Seventh street, and Harry H. Jacobson, 555 Grand street—both of Brooklyn, New York. Auto tires, etc.

Lee Tire & Rubber Co., of New York, Inc., August 13, 1914; under the laws of New York; authorized capital, \$20,000. Incorporators: Harry E. Field, 440 Riverside Drive, New York, New York; Albert A. Garthwaite, Conshohocken, Pennsylvania, and John J. Watson, Jr., Brookville, Long Island, New York.

Lighthouse Tire Co., Inc., July 23, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: John McLaren, F. B. Knowlton and S. V. Dowling—all of 154 Nassau street, New York, New York. To manufacture and deal in rubber tires for automobiles, etc.

Lighthouse Tire Co., July 25, 1914; under the laws of Delaware; authorized capital, \$1,000,000. Incorporators: John McLaren, F. B. Knowlton and S. V. Dowling—all of 154 Nassau street, New York, New York. To manufacture, buy, sell and deal in automobile tires and motor tires and wheels and accessories of every class and description.

Merrill Shoe Co., Inc., June 22, 1914; under the laws of New York; authorized capital, \$25,000. Incorporators: Joseph B. Cousins, John L. Hodge and Ernest C. Wheeler—all of 369

DeKalb avenue, Brooklyn, New York. To deal in skins, hides, rubber, etc.

Montauk Rubber Co., Inc., July 23, 1914; under the laws of New York; authorized capital, \$5,000. Incorporators: Hymann Friedland, 331 Thirteenth street; Wm. G. Turner, 1484 East Fourteenth street—both in Brooklyn, New York—and Leo Londoner, 751 East One Hundred and Sixty-eighth street, New York, New York. To manufacture and deal in rubber goods, etc.

Perfection Rubber Co., July 8, 1914; under the laws of Rhode Island; authorized capital, \$100,000. Incorporators: John B. Des Rosiers, 567 Westminster street; John T. Bannan, 313 Prairie avenue—both of Providence—and Ildege Des Rosiers, 6 Mason street, Pawtucket—all in Rhode Island. To manufacture, sell, market and otherwise dispose of a certain patented article known as "The Perfection Sanitary Belt."

Robinson-Seitz Tire Co., July 31, 1914; under the laws of New Jersey; authorized capital, \$5,000. Incorporators: George W. Robinson and Frank Robinson—both of 19 Vose avenue—and Arthur M. Seitz, 66 Comstock place—all of South Orange, New Jersey. To manufacture, sell, and generally deal in tires for automobiles, etc.

Steel Pneumatic Tube & Tire Co., Inc., August 10, 1914; under the laws of New York; authorized capital, \$200,000. Incorporators: John S. Heep, Frederick Fuller and Chas. O. Roth—all of 40 Wall street, New York, New York. To deal in tires of every kind, and other auto accessories.

Unceda Tire Filler Co., of New York, Inc., August 1, 1914; under the laws of New York; authorized capital, \$100,000. Incorporators: Max E. Rosenthal, 973 Tiffany street; Thomas Bligh, 2306 Seventh avenue—both in New York, New York—and Jos. Golden, 9 St. Marks avenue, Brooklyn, New York. To manufacture tire filler for automobile tires, etc.

RUBBER CLOTH IN GREAT DEMAND.

The Fairfield Rubber Co., of Fairfield, Connecticut, which includes in its product a large output of rubber cloth for use in the manufacture of automobile tops and seat covers, has recently received an order from the Ford company for all the rubber cloth that can be produced. The execution of this order necessitates the operation of the plant night and day and will probably call for an additional force of operatives.

A NEW FACTORY FOR THE SUSSEX RUBBER CO.

The Sussex Rubber Co., which was incorporated June 1, with a capital stock of \$50,000, is erecting a factory at East Rutherford, New Jersey, for the manufacture of tire sundries, tubes, molded goods, packings, etc. This building, which is of brick, of heavy mill construction, has a floor area of 60 x 110 feet, and will probably be completed early in October. The officers of the new company are: C. F. Teigeler, president; W. M. Sharpe, vice-president and manager, and A. E. Teigeler, secretary and treasurer.

WILSON TIRE & RUBBER CO. BUILDING AT SPRINGFIELD.

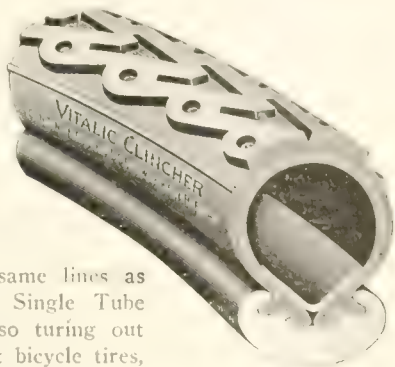
The Wilson Tire & Rubber Co., incorporated under the laws of Michigan, with a capital stock of \$1,000,000, is erecting a factory at Harvard Park, Springfield, Illinois. This factory, which is now nearing completion and will have at the start a capacity of 500 tires and 500 rims per day, will cost about \$150,000. It is situated just outside the city limits, on a ten-acre plot presented to the company by the Springfield Commercial Association. Forty per cent. of the stock issue of the company has been awarded for patent rights in the Wilson Pneumatic Tire, brought out about four years ago, and the Wilson Demountable Rim, which will constitute the product of the plant. The officers of the company are: E. W. Wilson, president; P. J. Jeup, vice-president; W. W. Gardner, treasurer, and A. P. Hicks, secretary. And these officers, with T. Reuther, R. N. Baker and Frank H. Watson, compose the board of directors.

CONTINENTAL RUBBER WORKS.

At the annual meeting of the Continental Rubber Works, held August 3 at the company's offices at Erie, Pennsylvania, the officers and directors of 1913 were re-elected for the ensuing year. These officers are: T. R. Palmer, president and general manager; A. Jarecki, vice-president; Charles Jarecki, secretary, and C. S. Coleman, treasurer. The first three officers are also on the board of directors, which likewise

includes Fred. C., Robert and R. K. Jarecki, O. E. Becker, Jacob Roth and J. M. Thayer.

The Continental company has recently added to its line of production the Vitalic Clincher Casing (cut of which is here shown) for motor-cycles, made along the same lines as the well known Vitalic Single Tube Tire. The factory is also turning out tread bands for worn out bicycle tires, as well as a number of novelties, one of which, the Continental-Erie Repair Band, is also illustrated herewith. This repair band, made of high grade rubber, can also be used as a luggage carrier. Another novelty is a Mud Guard Splasher, something that will surely appeal to every bicycle rider, for whose use it is specially intended.



THE TRAFFIC DEPARTMENT OF THE MOTOR AND ACCESSORY MANUFACTURERS' ASSOCIATION.

A few years ago a traffic service was inaugurated by the Motor and Accessory Manufacturers, an organization of the leading American makers of automobile parts and accessories. Since that time this department has developed such efficiency that thousands of dollars have been saved for members of the association who have made use of it. Any member may send all of his freight bills to the department, and each separate shipment will be carefully checked by experienced men to ascertain if the railroad or steamboat line has made an overcharge.

Some idea of the scope of the work, and how it is appreciated by members, is made evident by a few comparative statistics. The first year it was in operation (1911-1912) 43 members made use of it. During the fiscal year, July 1, 1913, to June 30, 1914, the department was used by 136 members, a total of 803 times. During that period 51,690 freight bills were audited, and out of the number a very material percentage were found in error, warranting traffic claims being entered.

Aside from auditing freight bills an important feature is the matter of consultation on shipper's rights on traffic matter of any character. If a member wishes to be advised how his particular article or commodity should be packed, described or billed, to secure the lowest transportation charge, he can secure this information from the department.

Mr. J. S. Marvin, general traffic manager of the National Automobile Chamber of Commerce, has direct supervision of this work, that has resulted in great benefit to the members who have taken advantage of this service.

A NEW PARTNERSHIP.

On the 10th of August, Wallace L. Gough and Clement B. McKay entered into a partnership agreement under the name of Wallace L. Gough & Co. and will be engaged—as Mr. Gough has been hitherto—in the importation of india rubber, gutta percha, balata and allied products.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

TRADE NEWS NOTES.

A certificate of incorporation has been filed with the Secretary of State by the Lee Tire & Rubber Co., of Manhattan. The incorporators of the company, which is capitalized at \$20,000, are: A. A. Garthwaite, of Conshohocken, Pennsylvania; H. E. Field, of New York City, and J. J. Watson, of Brookville, New York.

The Panther Rubber Manufacturing Co. is erecting a two-story addition to its plant at Monk and Washington streets, Stoughton, Massachusetts.

The sale of the Walpole Tire & Rubber Co. was not held on August 12, as arranged, being postponed owing to existing financial conditions created by the war in Europe. Notice to this effect was mailed by the receivers on August 10 and of a hearing to be held on August 31 on the question of fixing a new date of sale. A further dividend of 4 per cent. has recently been authorized, making 12 per cent. thus far distributed to the creditors.

The plant of the Star Rubber Co., of Akron, which several weeks ago went into the hands of a receiver, has been ordered sold at public auction. Sale will not be made, however, at less than two-thirds of the appraised value of the plant. This action is said to have been taken at the instance of the administrator of the estate of the late Homer Hine, former treasurer of the company.

The Norwalk Tire & Rubber Co., incorporated March 23 last, is soon to begin the manufacture of automobile tire casings. Thus far the product of the company's plant, located at Belden avenue, Norwalk, Connecticut, has been confined to inner tubes, but arrangements are under way for adding to the force and equipment and extending the line of production.

The building formerly occupied by the Leicester Rubber Co., at Catasauqua, Pennsylvania, and which was destroyed by fire on July 19, is to be replaced at once by a larger structure to occupy the site of the old plant.

Fifty employes of the Michelin Tire Co., of Milltown, New Jersey, including heads of departments as well as workmen—all natives of France—called upon by their home Government to report for war duty, have been granted indefinite leave of absence and their places have been temporarily filled.

During the past month the Hodgman Rubber Co. transferred the location of its mackintosh and rain coat department from Mt. Vernon, New York, to the main factory at Tuckahoe, in the same state, this department occupying a building especially erected for the purpose, and thus consolidating all the manufacturing operations of this company in one plant.

The makers of Diamond tires have been awarded a contract for supplying the tires required by the parcel post department to equip its automobiles in use all over the country.

Francis R. Peabody, vice president of the Acushnet Process Co., of New Bedford, Massachusetts, has removed to Akron, Ohio, where a branch has been established in order better to look after the interests of the company in that district.

FISK RUBBER CO. PLANS FURTHER EXTENSION.

The Fisk Rubber Co., of Chicopee Falls, Massachusetts, which is now erecting a three-story addition to its warehouse, also has plans under way for a duplication of its entire plant next year should present gains be maintained and thus warrant it.

This company has recently closed a lease for a new building to be erected at 2206 Locust street, St. Louis, Missouri, to be occupied by its branch in that city. This building will be two stories and basement and will be ready for occupancy by January 1 next.

Arrangements have also been made for the lease of a building to be erected at Tenth, Oak and Burnside streets, Portland, Oregon, to be occupied by the Fisk company.

New Rubber Goods in the Market.

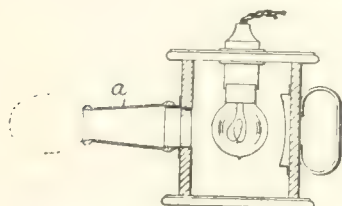
A PNEUMATIC PEN FOR PLASTICS.

AN instrument has been recently invented for writing, marking or decorating with plastic materials. The pen barrel is hollow, and connected to the rubber bulb in which the liquid plastic is placed. In operating the device the writer takes the pen in one hand and presses the air bulb with the other.



This forces the air through the rubber tube, compressing the plastic material which flows out at the pen point. A fine or coarse line can be drawn by varying the speed movement of the pen or by pressure on the air bulb. The latter is provided with a check valve. This device can also be used for applying the fancy decorations on wedding or birthday cakes. Patent No. 1,099,344.

RUBBER IN EGG TESTING.



The egg testing device illustrated herewith comprises a tube of rubber, tapered at one end and with beaded edges. The larger end of the tube is placed over the lens of a portable electric lamp, and the other is applied to the egg to be tested, as shown. British Patent No. 6,183 (1913).

THE CASTLE DANCING PUMP.

This new dancing shoe has been designed to meet the requirements of lady tango enthusiasts. A band of elastic fabric extends over the instep, holding the shoe in place. A leather strap and buckle conceal the elastic fabric. This strap is provided with a fastening device at one end which can be unclashed when it is desired to remove the shoe.



THE "SANITOR."

One of the latest sanitary inventions and aids to health

is the "Sanitor," a device for cleansing the mouth by vacuum drainage and for massaging the gums, thereby stimulating a full flow of blood to the tissues—effects considered exceedingly beneficial in Pyorrhea. The invention consists of a rubber mouth cup which fits over the teeth and gums of either jaw, connected by means of a rubber tube with a motor operated pump. In the dental office this device is used also for draining Avicular abscesses. [The Sanitor Co., Chicago.]

THE PHO-NO-GERM.

The part that rubber plays in the "Pho-No-Germ," or telephone disinfectant, will be seen by reference to the accompanying cut, which shows the disinfectant attached to the telephone transmitter. The container is filled two-thirds full with an antiseptic solution, which under laboratory tests has been found to kill such deadly germs as staphylococci, streptococci, diphtheria and typhoid, any or all of which might be distributed by the medium of the telephone. A few pressures of the rubber vacuum-bulb of this antiseptic liquid-containing disinfectant, however, is sufficient to clear the line. [The Only Telephone Disinfectant Co., Westerville, Ohio.]

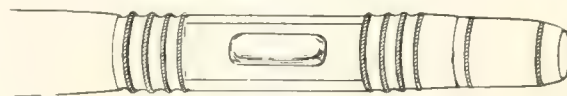


RUBBER PLUMMETS FOR JUMP STANDS.

The cords on the jump stands which form a part of field sports apparatus are now provided at their ends with rubber plummets, so that should a contestant fail in his attempt to clear the cord and instead become entangled in it, he may sustain no serious injury through contact with the weights used to hold the cord in place.

A PIECE OF RUBBER ERASER FOR A REEL-SEAT.

A fisherman with an ingenious turn of mind has discovered that the use of a small piece of rubber keeps the reel-seat of his rod taut and firm and makes a highly satisfactory arrangement. He bought an ordinary eraser, cut off a section about half an



inch long, cut out a little of the rod in the center of the reel-seat and inserted the piece of rubber. When the reel is pressed down in place on this piece of eraser and fastened in the usual way it cannot come loose. This is not, perhaps, an important new use of rubber, but one that will be interesting to fishermen.

THE DIME SCREEN DOOR CHECK.

A bumper has been devised to prevent the annoyance of slamming screen doors. It is made of molded rubber, tapered to give the greatest amount of spring, and is attached to the door frame. It is operated in connection with a plunger on the door and is said to be most effective, giving equal satisfaction whether the door is opened wide or only partly opened, as it does not depend upon the momentum of the door to make it work. As its name suggests, the price of this check is only ten cents. [The Caldwell Manufacturing Co., Rochester, New York.]

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

IMPROVEMENTS IN RUBBER PAILS.

THE rubber bucket has been on the market for some time. The *India Rubber World* of September, 1901, contained an illustrated description of the Goodrich collapsible bucket, and the issue of October, 1912, showed that company's improved pail with strainer spout, while various other rubber pails have been noted as they made their appearance. But improvements which render it of greater practical value have been made from time to time, and the cuts herewith illustrate two of the latest developments in the manufacture of this useful accessory.

The first cut shows a cloth-lined rubber bucket with reinforced center, double bottom and corners to prevent leaks and strong handles that will not pull out. It is collapsible and has a capacity of a gallon and a half. It is known as the W. T. Co. rubber pail. [Whitall Tatum Co., New York.]



The second cut illustrates a folding water pail with legs and handles. This is made of waterproof canvas, rubber coated, and is supplied with four pieces of hard wood, which are pushed into spaces provided on the sides, thus keeping the bucket rigid and forming substantial legs for its support. When not in use, these wooden legs may be slipped into a loop on the bottom of the bucket, which can be folded into a very small space. The third illustration shows a basin made on the same lines as the bucket. [Abercrombie & Fitch Co., New York.]



ALGOT LANGE BACK IN THE UNITED STATES

Several thousand people in the United States are familiar with the explorations of Algot Lange, a traveler and writer of Danish origin but for several years past a resident of the United States. His book, "In the Amazon Jungle," issued about two years ago, was one of the most interesting narrations of tropical exploration yet put into type. He also acted as lecturer at the rubber show held in New York in the fall of 1912, describing the Amazon country with stereopticon views made from photographs taken by himself. His lectures were largely attended. Mr. Lange recently returned to New York after an absence of a year and a half spent in further exploration along the Amazon. He devoted most of his attention during this time to the Lower Amazon, where he undertook a number of exploring expeditions in behalf of the Brazilian Government. He has brought back with him an interesting collection of idols, ceramics and funeral urns taken from a sacred mound in the Sinking Island, about 200 miles north of Pará. These relics Mr. Lange thinks were left in this mound many centuries ago by a nomadic tribe from Asia, the tracery and other markings on the urns appearing to indicate an Asiatic origin. Incidentally, Mr. Lange vouches for Roosevelt's discovery of a river a thousand miles long. He, moreover, states that there are still other rivers just as large in the heart of Brazil awaiting discovery.

THE RUBBER TIRE.

EMERSON says "The first man who made a pair of shoes carpeted the earth with leather."

The invention of the rubber tire made the automobile possible. And if rubber tires had been invented before iron wheels were utilized, the railroads would never have existed.

When Stephenson discovered that it was impossible to make speed on a roadway with an iron-wheeled vehicle, he laid wooden rails and covered them with strips of iron, thus getting a comparatively smooth surface.

When I used to jog horses with my neighbor Ed Geers, the "Silent Man," I realized, in driving a single block over a macadam pavement from the barn to the track, how impossible speed was on any road except one specially prepared.

The race track was made of loam and tanbark.

Here was a soft footing for the iron-shod feet of the horses, and a yielding pavement for the iron tires of our sulkies.

One fine day some one sent to Ed Geers a present of a little low-wheeled sulky. The wheels were evidently those taken from a bicycle. At that time I had never heard of ball bearings. But I soon understood that the ball-bearings shift the friction from one place to a great many.

The little low-wheeled sulky was laughed at, then admired. Finally Ed Geers hitched a horse to it. Two turns around the half-mile track and his horse was used to the contrivance.

It ran as silently as Ed Geers himself, and with so little friction that it seemed to be chasing the horse and pushing him along.

And I saw that the horse was drawing the sulky by the reins, and not by the traces.

And so we came down the homestretch, neck and neck. And then Ed Geers drew out in front of me very easily and went under the wire three lengths ahead. We tried it again, and the "Silent Man" delivered himself thus: "It means about ten seconds on the mile." Then he dived into silence and pulled the silence in after him.

A few days later Ed Geers drove a race with this little low-wheeled, ball-bearing sulky at Buffalo. When he drove out to warm up he got the laugh from the grandstand. But he walked away with the race just the same. He had just ten seconds leeway over the bunch.

The next year on the Grand Circuit not a single high-wheeled sulky was seen. The bicycle tire and the ball-bearing axles had come to stay.

As Emerson's shoemaker carpeted the earth with leather, so has the pneumatic tire paved the roadway with rubber.

Fifteen years ago the principal use for rubber was in making gum shoes for politicians.

The gum shoe is not now so much in demand as it was then.

Doctor B. F. Goodrich was a practising physician at Tarrytown, New York, when the high bicycle came in. It had a solid rubber tire. One day Doctor Goodrich just took a piece of garden hose and fastened it on his high wheel with the aid of wires.

He found that this lessened the bumps, but the hose soon flattened. Then he put a smaller hose inside of the garden hose. And the third move was to blow the little hose that was inside of the big one up with air. Then the pneumatic tire was born.

Curiously enough, a man by the name of Dunlop, in England, did the same thing at about the same time.

It was very much like the invention of the telephone. Gray, of Oberlin; Dolbear, of Tufts; Alexander Graham Bell, of Boston, and Thomas Alva Edison, of the round world, turned the trick at the same time.

Everybody now agrees that it is the rubber tire and the pneumatic inner tube that make the automobile possible. With the iron tire we would still be hitting the pavement at five miles an hour and no more.—*Elbert Hubbard, in the New York American*

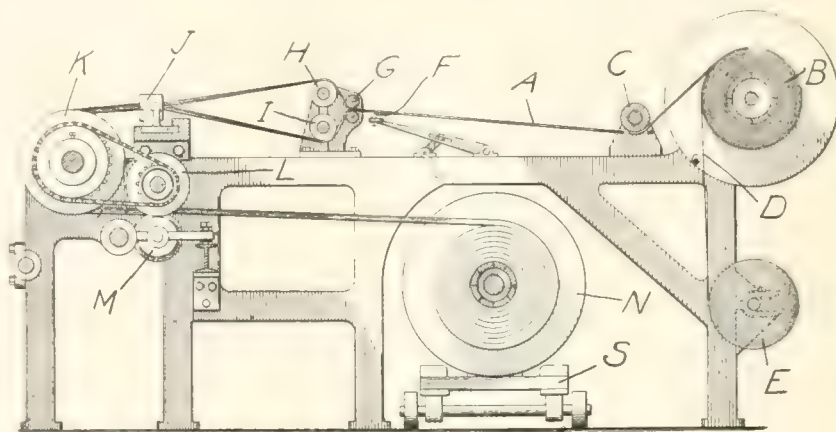
New Machines and Appliances.

STEVENS' BEAD FORMING MACHINE.

THE drawings herewith show a side view, partly in section, and a top view of a new bead forming machine, designed by William C. Stevens, of the Firestone Tire & Rubber Co., of Akron, Ohio. The machine forms four beads simultaneously from narrow strips of impregnated fabric.

The fabric used in this process is made in a sheet 44 inches wide, being composed mostly of strong, longitudinal threads and comparatively few weft threads, of less strength, so that the fabric may be easily slit into strips. The fabric *A* is unwound from a supply roll *B*, and is passed under a guide roller *C*. The liner sheet *D* is wound up on a reel *E*. The fabric passes over a series of knives *F*, 175 in number, and is slit back for a distance of about 2 feet, into strips $\frac{1}{4}$ of an inch in width. The ends of these strips are passed between presser rolls *G* and then, alternately, one above the roller *H*, and the other below the roller *I*. After being thus separated the strips are led into bunching dies *J*, four in number, where they are gathered into four groups and passed into V-shaped grooves in the fillet-forming wheels *K*. The rubber with which the fabric is impregnated is unvulcanized and still tacky and helps hold the beads in shape after leaving the grooved wheels *K*. The four beads then pass between grooved rollers *L* and presser rollers *M*, which give them their final shape. The speed of this last set of rollers is greater than that of the wheels *K*, so that in addition to being compressed, the beads are subjected to a tension to remove the slack from the warp

with the fabric, which is then slit by the rollers *H* and *I*. The forming rollers and bunching dies are mounted on splined shafts, so that they may be adjusted longitudinally in case more or less than 44 strips are to be used in forming the beads. Between each of the grooved wheels *K* and their common shaft *T*, is a ratchet connection, by means of which the operator may turn any of the wheels independent of the others, in order to maintain a uniform tension in all of the four groups of strips.



SIDE VIEW OF STEVENS' BEAD FORMING MACHINE.

ANOTHER SAFETY APPLIANCE FOR THE RUBBER MILL.

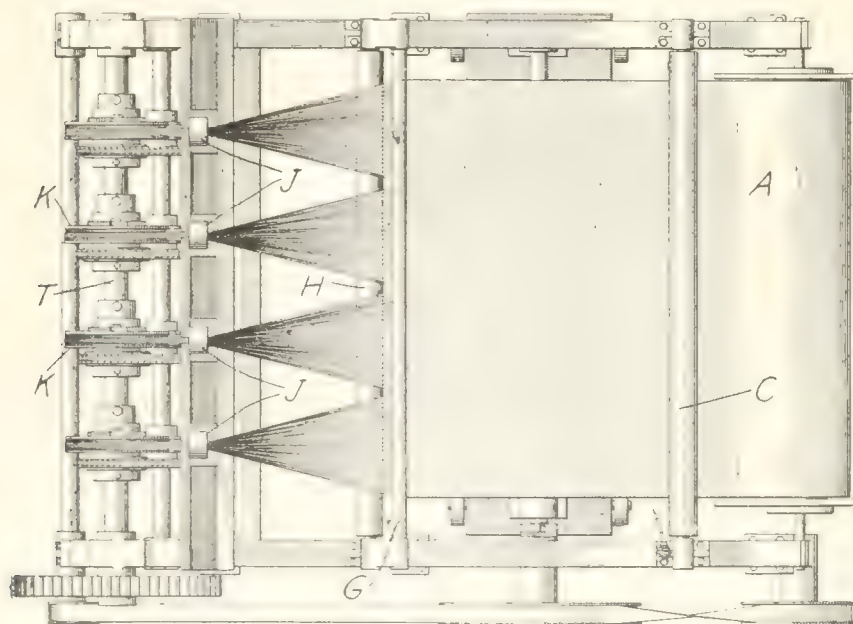
THE present campaign for "safety first" being waged by public service corporation and manufacturers generally has led to the introduction of many devices intended to aid the operator in the prevention of accidents. The wide-awake executives of rubber goods factories have not been slow to appreciate the advantages of such devices as applied to their special needs. These columns have, from time to time, set forth the advantages of the different types of safety devices applicable to the rubber mill.

As another example of a quick operating, safety throw-out device which has been developed for this work, we illustrate herewith the Dodge split friction clutch and gravity brake. In this device the clutch is located on the line shaft supplying power to the machines, and is placed under the control of the operator by means of a bar or cord suspended over each machine. A slight pull on this bar or cord automatically releases the clutch and cuts off the power.

Because of the kinetic energy possessed by the rotating parts of the mills and shafting, the machines do not come instantly to rest and the danger to the operator, though greatly reduced, is not entirely eliminated. To secure a complete stoppage of the machines in a short time, a simple type of band brake, automatically

released and applied by the force of gravity, is placed on the driven line.

Reference to the accompanying drawings, which show a side elevation and an end view of the clutch and brake, will give a good idea of its construction and operation. One part *A* of the clutch is keyed to the power shaft *B*, while the other part *C* of



PLAN VIEW OF STEVENS' BEAD FORMING MACHINE.

threads. The completed beads are wound up on reels *N*, mounted on a car *S*. When the reels are full the shaft is disengaged from the driving mechanism, and the car is run from under the machine frame.

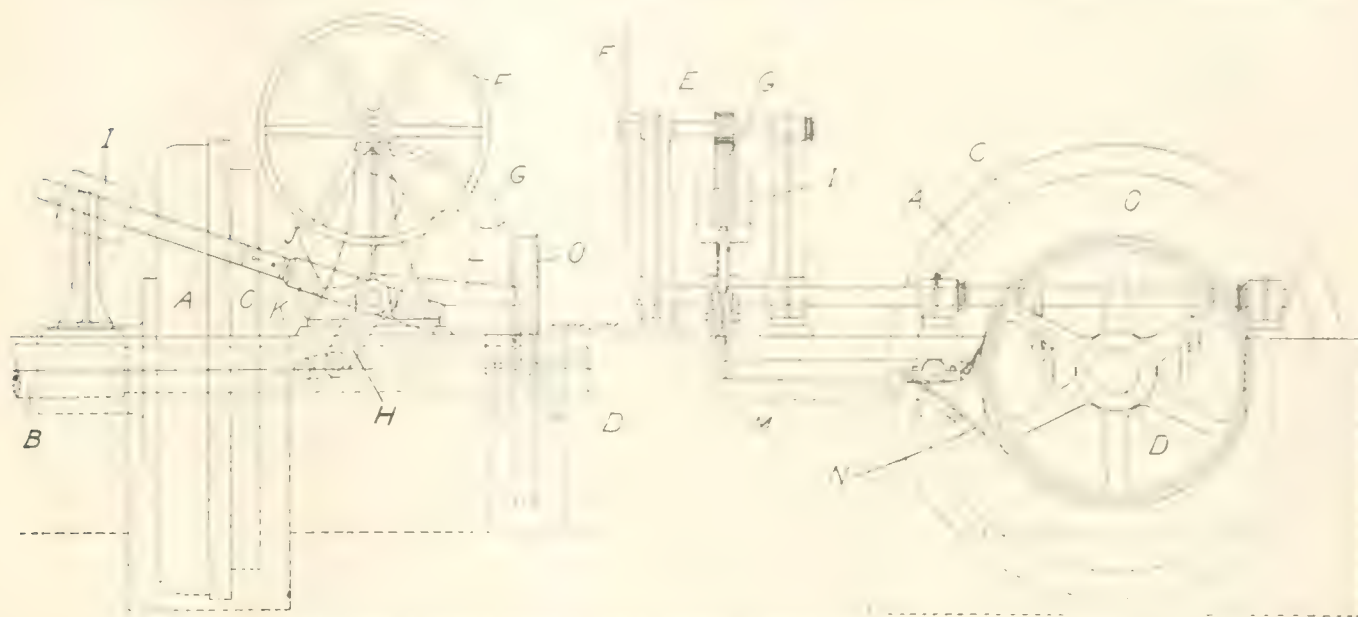
When the fabric is first led from the supply roll and slit by means of the knives *F*, these knives are lowered out of contact

the clutch is keyed to the mill shaft *D*. To engage the clutch, a pinion *E* operated by a hand wheel *F* is engaged with a segment *G*, so that when the wheel is turned the lever *H* is thrown to the left to force the clutch together.

In case of emergency, the cord or bar suspended over any one of the machines is pulled, releasing the weight *I*. As this weight

horizontal to vertical. In order to prevent overloading the head and to insure a uniform coating of the wires, a relief valve is provided to maintain a uniform pressure of the insulating compound.

U. S. Patent No. 1,100,934, June 23, 1914. Granted to J. K. Williams, of Akron, Ohio. This invention is a vulcanizing press for



THE DODGE FRCTION CLUTCH WITH SAFETY LEVER, COUPLER AND EMERGENCY BRAKE

falls the pins *J* engage the lugs *K*, raising the lever *L*. This action also raises the lever *M* and applies the brake band *N* to the brake drum *O*. Any effective force desired may be secured at the brake band by varying the distance of the weight *I* from its center of rotation. The clutch may be built in any size up to 1,000 horsepower at 100 r. p. m.

RECENT MACHINERY PATENTS.

ASIDE from the machines described above, there are a number of other interesting devices recently patented in this country and abroad, but which lack of space prohibits illustrating. These are briefly described below.

U. S. Patent No. 1,099,535, June 9, 1914. Granted to A. C. Bolton, and assigned to the Gutta Percha & Rubber Manufacturing Co., of New York. This is a machine for wrapping hose with fabric preparatory for vulcanizing. Instead of applying the fabric in a spiral winding, it first wraps a strip of fabric longitudinally around the hose and then applies a spiral winding outside of this. This eliminates the spiral marks left by the edges of the fabric. The hose mandrel is omitted and the hose inflated with air while being wrapped. The machine may also be used for unwrapping the fabric after vulcanizing.

U. S. Patent No. 1,099,763, June 9, 1914. Granted to Russell Parker of Parker, Stearns & Co., Brooklyn, New York. In the specifications of this patent are described an apparatus and a process for making rubber covered belts, such as are worn by women for holding down the shirtwaist and supporting the skirt. The process may also be used for making men's belts or garters, and for driving belts.

U. S. Patent No. 1,100,002, June 16, 1914. Granted to C. L. Van Ness, of Akron, Ohio. Mr. Van Ness has invented a multiple insulating head for application to forcing machines, by means of which several wires may be covered with rubber simultaneously. The head has six dies, each of which is adjustable independently of the others. It is provided with cooling chambers and may be adjusted so that the dies lie at any angle from

curing tires, in which the bearing members for the hydraulic ram are accessible from the outside, eliminating the necessity for taking down the press or going into the vulcanizing chamber.

U. S. Patent No. 1,101,053, June 23, 1914. Granted to W. L. and O. Bland, of Chicago, Illinois. This is a molding machine adapted to mold rubber articles without flashing the material from the dies and forming ribs or fins on the finished product. The drawings of this device illustrate the machine with dies for molding telephone receivers. The material is fed into a hopper and forced by a conveying screw, like a tubing machine, into feeding channels, and from there into the dies. The parts of the mold are forced together by four hydraulic presses, one on each side, one at the top and one at the bottom of the machine.

U. S. Patent No. 1,101,555, June 30, 1914. Granted to C. Kuentzel and assigned to the Goodyear Tire & Rubber Co., of Akron, Ohio. This is a machine for wrapping and unwrapping tires before and after vulcanizing. It may also be used for wrapping tires with paper for shipment, and also for covering rolls of wire and cable. The machine is similar to Kuentzel Patent No. 1,079,601, which was described in the February issue of THE INDIA RUBBER WORLD. The present machine differs from the former principally in minor details of construction, such as the holding device for the tires and the method of drive.

U. S. Patent No. 1,101,732, June 30, 1914. Granted to Henry J. Doughty and assigned to the Doughty Tire Co., of Portland, Maine. This invention is a combination tire mold and vulcanizing press. The mold is made in three parts and the core in eight segments. The tire is first roughly built up into the desired form and placed in the center mold section, which covers the tread portion. The press operates by hydraulic power, and when pressure is admitted four of the core segments are first expanded into the tire and the remaining four segments are then forced between these to expand the tire against the tread mold. The press is then operated to force the upper and lower mold sections together, completely enclosing the tire, after which steam is turned into heating chambers surrounding the mold.

U. S. Patent No. 1,102,178, June 30, 1914. Granted to W. B.

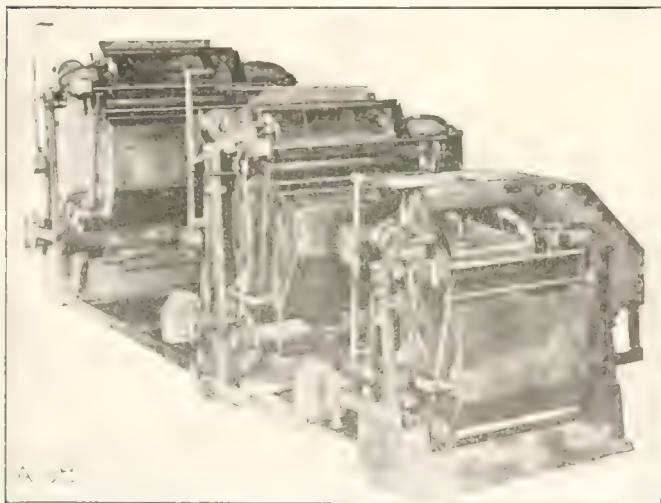
and E. W. Wescott and assigned to the Walpole Shoe Supply Co., of Boston, Massachusetts. This invention relates to an apparatus for heating strips of cement-coated fabrics used in the manufacture of "Gem" insoles. The machine eliminates overheating of the coated fabric and makes it easier for the operator to move the strip out of contact with the heating plate than to leave it on the plate too long and then dispose of the spoiled length.

British Patent No. 6,810 (1913). Granted to the Dunlop Rubber Co. Birmingham, England. This is a machine for automatically applying the anti-skid studs to tire treads. The tire is mounted on an annular mandrel having holes in the position for the rivets. The mandrel is rotated by a ratchet to bring the holes successively into register with a riveting device for applying the studs and washers.

French Patent No. 454,444 (1913). Granted to M. R. P. C. Buzat. In the specifications of this patent a spreading machine is described by which unvulcanized sheets for use in surgical and other rubber goods are treated in such a manner as to preserve the nerve of the rubber. The solution is spread in thin layers on a smooth endless band running over two drums. At each turn of the band it receives a thin coating of rubber, which dries during its passage over a heated table. The operation is continued until the layers of rubber are built up to the required thickness, when talc is applied and the sheet is detached. The spreading table is covered with a sheet-iron hood having a suction outlet, through which the solvent vapors are drawn off and recovered.

AUTOMATIC WEIGHING OF COMPOUNDING INGREDIENTS.

THE possible use of the machine shown in the illustration is the reason for its appearance here. In a word, it is a swift, accurate and sensitive weighing mechanism which works faster



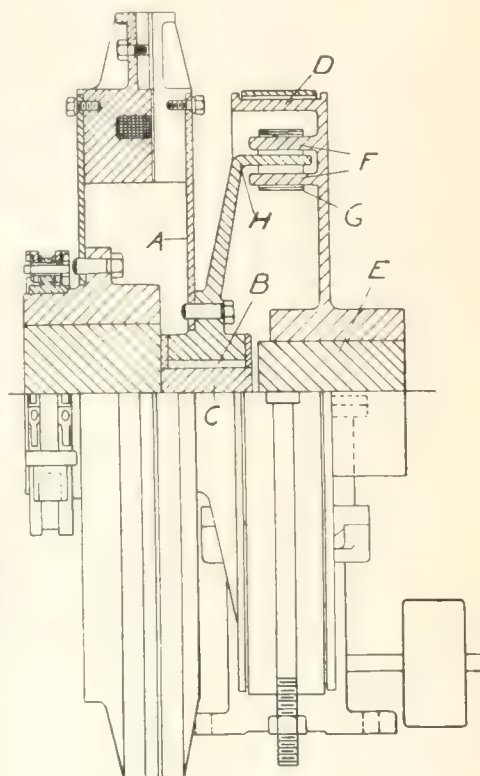
than any expert human weigher. It is used in a variety of industries where dry ingredients are weighed and assembled. The suggestion is that a gang of these machines could handle the ingredients that go to make up a compound, one for whiting, another for litharge, still another for sulphur and so on. The machine takes the material from a bin, weighs it and dumps it in a pan. The pans would pass in front of the machines and receive the various ingredients in rotation. Of course it would only be practical where single products like tires or shoes are made on a large scale.

Contracts have been let for the erection at Toronto, Ontario, of a chewing gum factory for the William Wrigley, Jr., Co., Ltd.—the largest factory of its kind in the British Empire.

MAGNETIC CLUTCH AND BRAKE WITH FLEXIBLE COUPLING.

THE Cutler-Hammer Clutch Co. has in course of construction a combination magnetic clutch, brake and flexible coupling which, when finished, is to be installed in the plant of the Midgley Tire & Rubber Co., of Lancaster, Ohio. The coupling is to be placed between the line shaft, which operates the plant, and the main mill shaft, to provide a means for shutting down the entire equipment in case of emergency. The accompanying drawing shows a cross section of the device, through the center of the clutch and brake.

The clutch and brake to be used are of the same type as that illustrated and described in the June issue of THE INDIA RUBBER WORLD. The equipment differs, however, from anything previously supplied to rubber mills, in that the armature member, A, of the clutch is carried by a roller bearing, B, on an extension, C, of the



CUTLER-HAMMER MAGNETIC CLUTCH WITH FLEXIBLE COUPLING.

power shaft, and connection is made between the armature and the brake wheel, D, which is carried by the mill line shaft, E, through a flexible coupling made integral with the brake wheel. This flexible coupling, which forms the feature of the equipment, consists of cylindrical extension, F, on the flange carrying the brake wheel. These extensions are slotted and encircled by a rawhide band, G. A flange, H, carried by the armature member of the clutch, projects into the annular slots encircled by rawhide bands and serves to transmit the torque. This coupling is sufficiently flexible to permit the driving and driven shafts to be out of level as well as out of alignment. The clutch is to have a normal rating of 450 horsepower at a speed of 90 revolutions per minute.

An order for 2,000,000 bales of cotton has been received from Japan by southern planters, to take care of the Chinese demand for finished cotton goods heretofore largely supplied by Germany.

The Russian Government, according to the press of that country, proposes to order 336 aeroplanes for the use of the War Department, all of which are to be completed by the autumn of the present year. Orders have already been placed for three large dirigibles, two of which are to be constructed in France and one in Russia.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE TRADE AND THE WAR.

THE abnormal and unprecedented conditions now existing impose a certain degree of reticence upon trade journalists. It is permissible, however, to touch upon certain matters in a general way, especially as publication takes place in a friendly state. Ordinary trade is, of course, much disorganized by the trend of events, while, as far as the rubber manufacturers are concerned, it goes without saying that those departments of the works which turn out naval and military requirements are working at high pressure to deliver goods on contract, but which in the ordinary course would not have been wanted for some time. This applies not only to direct government deliveries, but also to the business done with the naval construction yards, etc. Owing to the prolonged closing of the stock exchanges in London and the provinces, business in rubber plantation shares has practically ceased and such quotations as are obtainable are merely nominal.

Among the manufactured goods which it is forbidden to export at the present time are rubber bandages and other hospital requisites. No doubt the same order has been issued with regard to the continental belligerent countries, and possibly the resources of American manufacturers may be requisitioned in Europe to a much greater extent than has previously been the case. The high price of petroleum and the general desire to avoid expenditure on luxuries is causing a large reduction in motoring, though the taking over by the war office of numbers of motor vehicles, more especially of the transport type, should keep up the demand for tires to the exclusion of certain well known makes which need not be particularized. Few rubber goods have their country of origin so clearly marked as have motor tires, a fact which has led to trouble for travelers on the continent.

CONVEYOR BELTS.

With respect to the mechanical rubber trade, the greatest increase as regards individual products in the near future will, I imagine, be in conveyor belts. Although long used in America in connection with the loading and unloading of bulk cargoes, such as coal and iron ores, they are of quite recent introduction to British ports for this purpose. In the loading of vessels with coal in the north of England it has been customary to tip each wagon of a team load into the vessel; now, however, the plan is being adopted of discharging the train loads into large storage bins, from whence the coal is shipped as required by continuously moving conveyor belts. In this way economies are effected of considerable importance to shipping and railway interests. Large belts have been installed recently by some of the railway companies, and it is expected that many important orders will shortly be placed. Ordinary widths of rubber conveyor belting are 36 inches, 42 inches and 48 inches.

THE LIMPLEY STAKE WORKS.

The interesting history of this small works as a nursery for rubber trade developments has entered upon another chapter, as one of the latest rubber tires is now being made there, about which I hope to say more on a future occasion. Originally a saw mill, the premises, which are situated near Bath, in the west of England, were the first home of the Avon Rubber Co., now located in much more commodious buildings at Melksham, a few miles away. Later on Messrs. Wallington and Weston developed their tire business there, before moving into larger premises near Trowbridge. Sub-

sequently Mr. MacLulich took the premises to work the Sirdar tire patent, moving after a year or two to an old woollen mill at Bradford-on-Avon, opposite to which, on the other side of the river, are the works of Spencer, Moulton & Co., so long known in the railway buffer trade and now for their solid tires.

This western district in which the rubber trade is now well established was formerly noted for woollen manufacture, its decay dating from the introduction of this industry into the large Yorkshire towns. Contiguity to the port of Bristol and cheap labor are favorable conditions, the cottages occupied by the workmen being naturally in more salubrious surroundings than are prevalent in the large manufacturing towns.

RUBBER MACHINERY.

It is a noteworthy fact that, while the number of rubber manufacturers in Great Britain of any real importance has remained stationary, a considerable increase has taken place in the ranks of rubber machinery manufacturers. To some extent the large increase in the use of rubber by firms making a specialty of tire production may be an explanation, but the main reason may be attributed to the plantation industry. The demand for British made washing rolls from the Far East has been large, orders coming not for one or two but for twenty at a time. It may be said that the requirements of the plantations having been satisfied orders from this source will cease. Quite an optimistic opinion prevails, however, among the machinists on this point, as they say the next move will be to replace the small rolls now in use by others of larger size.

FACTORY SHUTTED RUBBER.

The latest about this is that work has been stopped at the Handforth plant, although a good deal of machinery has been installed. It is said that some difficulty has arisen in carrying out the process and that at the moment rubber equal to the samples sent out to the trade cannot be made. I give this statement for what it is worth. At any rate, the manufacturers are still waiting for their bulk samples, which are overdue. The works have been taken on a five-year lease at a rental of £3,000 a year.

PERSONAL.

Mr. George Price, formerly of the St. Helens Rubber Works and the Gorton Rubber Co., has been appointed assistant works manager at the Northern Rubber Co., Retford. Mr. Scott retains his old post of proofing manager.

ENGLISH PROSPECTS OF SOLID RUBBER TIRES.

A writer in the London "Times" remarks that the increased production of rubber has given us tires suitable for all classes of commercial vehicles at a cost which will permit of their economical use even for light traction engines. The Pickfords and other carriers have recently made some very satisfactory experiments, proving the great durability of solid tires on light machines, some of these tires showing a mileage of several thousand miles.

British imports of automobile tires for the first six months of 1914 reached a value of £1,264,508, against a total for the same period of 1913 of £1,308,288. Exports for this period amounted to £298,652, against £395,985 for the first six months of 1913.

ADDITIONAL AWARDS OF PRIZES AT THE LONDON INTERNATIONAL RUBBER EXHIBITION.

IN the August issue of THE INDIA RUBBER WORLD (page 587) a list was published of the principal prizes awarded in the different competitions at the London Rubber Exhibition. Some additional names having since been received, a supplementary list is annexed.

Owing to the extensive scope of the exhibition awards, those quoted only include first prizes, identified with rubber

SILVER CUP.

Presented by THE INDIA RUBBER WORLD, New York. For best method of coagulating plantation *Hevea*. Dr. Carlos de Cerqueira Pinto, Pará.

SILVER CUPS.

Presented by Mr. Arthur Lampard. For rubber trade tennis tournament. Mr. A. A. Craigen and Mr. H. E. Mason.

SILVER CUP.

West India Committee Competition. For best sample from an individual West Indian exhibitor. Hill's plantation, British Guiana.

CEARA GOLD MEDAL.

"Tropical Life" Competition. W. Egerton, of Coorg Coffee Co.'s estates, Coorg, Southern India.

MR. JOHN McEWAN'S CUP.

For best exhibit wherever produced. R. D. Greenhill, manager of Highlands & Lowlands estate in Federated Malay States.

MR. THOMAS NORTH CHRISTIE'S CUP.

For best exhibit produced in Ceylon. J. Farley Elford, Kintyre Tea Estate Co., Limited, Ceylon.

MR. F. L. HAMILTON'S CUP.

For best exhibit produced in Federated Malay States or Straits Settlements. P. F. Wise, manager of Balgownie estate in the Federated Malay states.

INTERNATIONAL CONGRESS OF TROPICAL AGRICULTURE.

COVERING in part the same period as the recent International Rubber Exhibition, the International Association of Tropical Agriculture lately held its third congress at the Imperial Institute, London. The meeting was under the chairmanship of the president, Professor Wyndham R. Dunstan, who was assisted by a number of important Colonial officials. Previous congresses had taken place at Paris in 1905, and at Brussels in 1910.

King George V sent a message of welcome and expressed the hope that the discussions would contribute to the advancement of agriculture in the tropics.

In his address the chairman, reviewing the development of tropical agriculture during the last four years, urged the importance of technical education for those called upon to fill responsible agricultural positions in the tropics. Well-trained men holding the diploma of a tropical college would easily find remunerative employment. Ceylon he considered best suited for the location of such a college. The question likewise arose of forming a British Institute of Tropical Agriculture, on the lines of other representative professional bodies.

Among other features of the congress was a discussion of "The Factors Which Determine Variation in Plantation Rubber, with Special Reference to Its Uses for Manufacturing Purposes." Mr. W. A. Williams, of the North British Rubber Co., stated that rubber was given such a working at the plantation mills, that

manufacturers could not vulcanize it afterwards. He also complained of planters using chemicals for lightening the color of rubbers.

With regard to standardization, Mr. Spencer Brett (of Messrs. Gow, Wilson and Stanton) said he was convinced the producer of cultivated rubber in the East enjoyed all the conditions necessary for producing qualities more stable in character than any others, provided there was due supervision in every department of collection and preparation. Dr. Schidrowitz recommended manufacturers working towards using plantation rubber without washing. He added that the greatest care was taken in packing tea, which was sold for about 10 cents per pound, while rubber, selling for 50 cents per pound, was simply thrown into a box and had to take care of itself. Sir Edward Rosling suggested blending rubber from different large plantations, in the same way tea was blended, thus arriving at a common standard.

In summing up the president said more facts were required; only to be obtained by laborious research. He considered the time was premature for fixing a standard, it being necessary before doing so to decide what the standard was going to be.

Mr. T. Petch, Government Botanist of Ceylon, read a paper on "The Principles of *Hevea* Tapping as Determined by Experiment," in which he urged tapping experiments being conducted on virgin trees, with a view to obtaining further data. He considered that at present the greatest scope for tapping experiments lay in the direction of "change over" systems, in which different sides of the tree were tapped alternately for periods of two or three months.

Dealing with "The Cultivation of *Hevea brasiliensis* in Uganda," Mr. Samuel Simpson, Director of Agriculture, Uganda, reported that this rubber tree is the one being now most largely planted there, coffee being generally planted as a "catch-crop." He added that the area in Uganda under *Hevea brasiliensis* is increasing more rapidly than that planted in all the other kinds of rubber taken together.

In another paper, on "Diseases of *Hevea* in Ceylon," Mr. Petch stated that though *Hevea brasiliensis* has been cultivated in the East for more than thirty years, it has acquired few diseases; the majority not serious. Other diseases were treated by Mr. E. Ernest Green, late Government Entomologist, Ceylon, and Mr. A. Sharples, Assistant Mycologist, Federated Malay States.

"Increasing the Yield of *Funtumia* by the Sparano Method of Tapping" was discussed by M. Gisseleire, of the Colonial Office, Brussels, who said that *Funtumia* plantations had, as a rule, given unsatisfactory results; the yields being much smaller than those obtained from *Hevea*. Still, as the Congo State has planted a large number of *Funtumia* trees, experiments are being continued, with a view to improving the system of tapping through the method devised by Mr. Sparano, one of the Congo government agriculturists.

Under the head of "Ceara Rubber Cultivation and Manufacture in Southern India," Mr. Rudolph D. Anstead reported that with improved methods of tapping, Ceara has since 1904 been extensively planted in Southern India, where it has been found to respond to good soil and cultivation. Some 17,000 acres are now planted with it. It is believed that in the hill districts with a rainfall of 70 to 80 inches, where *Hevea* will not flourish, Ceara will prove a valuable crop, especially in conjunction with coffee.

Mr. Ashmore Russan, Director of the Soconusco Rubber Plantations, Limited, and London director of La Zacualpa Plantation Co., dealt with present methods of *Castilloa* cultivation in Mexico. He considered their comparative yield shows that *Castilloa* may be more suitable for cultivation in Mexico than *Hevea brasiliensis*, owing to the deficiency of labor.

A resolution proposed by Sir Henry Blake supported the proposed foundation of an Imperial College of Agriculture in the British Tropics and appointed a general committee to co-operate with the London committee which is promoting the establishment of the institution.

THE GERMAN RUBBER INDUSTRY.

WHILE America and England divide the honors of making the first attempts to use rubber industrially, Austria and Germany soon followed. In 1828, Johann Nepomuk Reithoffer of Vienna was granted an Austrian patent for the manufacture of rubber thread, cut out of Para bottles and covered with worsted, silk or wool. A factory was then established by Francois Fonrobert in 1829 at Finsterwalde, near Berlin, for the working of a similar process; this being the start of the German rubber industry.

Scientific rubber investigation commenced in Germany in 1832, when Dr. F. Lüdorsdorff of Berlin discovered that rubber, treated at the temperature of 12.25 deg. C. (54.05 deg. F.) with oil of turpentine and sulphur, displayed a notable resistance to light and oxidation. It was, however, reserved for Charles Goodyear to discover and improve the process of vulcanization with sulphur in 1839.

In the year 1846, Werner Siemens, then a German artillery officer, proposed the use of gutta percha for the insulation of telegraph wires, building the first gutta percha press in 1847; while the first submarine cable was laid in 1850 between Dover and Calais by Brett. The first rubber shoe factory in Germany was that established in 1850 at Mannheim by the Etablissements Hutchinson, a Paris concern, of American personnel.

PROGRESS OF GERMAN RUBBER MANUFACTURE

A notable discovery of that period was that of the manufacture of hard rubber, by Nelson Goodyear, that process being employed in America by Meyer & Poppenhusen, branch of the German firm, H. C. Meyer, of Hamburg. In 1856 the first German hard rubber factory was established, that of the "Hamburg Rubber Comb Co.," now Dr. Heinrich Traun & Sons. The same year witnessed the installation of the rubber shoe factory of Albert & Louis Cohen, now the "United Harburg-Vienna Rubber Factories"; this combination also including the Austrian Reithoffer factory.

Notwithstanding these successes, progress in Germany was slow until the foundation of the German Empire in 1871, the effects of which were experienced in a marked development of the industry. This has been noteworthy during recent decades in the development of the tire and airship industries, under the additional influence of various important consolidations.

Statistics of German rubber goods manufacture show that from 36 concerns in 1861, with 1,788 workers, it gradually attained the following dimensions:

1875,	120	establishments	with	5,635	hands
1882,	243	"	"	8,975	"
1895,	450	"	"	16,366	"
1907,	539	"	"	31,909	"

Since 1907 official figures of the number of factories are wanting, but according to the estimate of the "Gummi-Zeitung" there are now about 150 important concerns, in addition to a large number of small ones. Of greater importance are the estimates of the increase in the number of hands employed, from 31,909 in 1907 to 40,000 in 1911 and to 45,000 at the present time. According to the census of 1907, 23,347 horse power was then used in 252 out of the 539 factories. The mechanical equipment at that time included 8,837 machines.

The results of 33 important rubber goods manufacturing companies for 1912 showed that 25 of them made profits, and that an average dividend of 12.3 per cent. was distributed in 22 cases; the lowest rate being 2 to 3 per cent. and the highest 25 to 50 per cent. The aggregate capital of the 33 companies equaled \$20,943,500.

Among special new features of German production during the last half century were: in the "sixties"—asbestos goods, hose, ice bags, air cushions and rubber balls; in the "seventies"—

rubber stamps, bicycle tires and belting; in the "nineties"—rubber toys, rollers, seamless and cut goods, garments, automobile tires and balloon materials, as well as regenerated rubber. Sundries have also constituted an important section of German production

EXPORTS OF GERMAN RUBBER GOODS.

Exports of German rubber goods for a series of years equaled: 1889, \$5,663,750; 1899, \$13,590,000; 1909, \$13,792,500; 1910, \$16,713,500; 1911, \$18,529,000; 1912, \$31,351,000; 1913, \$32,500,000.

The principal foreign outlets for German rubber goods were in 1910: Great Britain about \$3,500,000 (largely sheet rubber in conjunction with fabrics, hard rubber goods, textiles with rubber threads, and insulated wire); France, about \$1,250,000 (to a large extent hard rubber and rolled sheets of soft rubber; Italy, about \$1,000,000, and Austria-Hungary a like amount. Among the nations consuming German rubber manufactures is also Switzerland, which takes about \$1,000,000 worth of sheet rubber combined with fabrics and textile goods in the piece, coated with rubber.

CONSUMPTION OF RUBBER.

The consumption of crude rubber in Germany, as shown by the difference between the imports and exports, was: 1889, 3,329 tons; 1899, 8,295 tons; 1909, 18,117 tons; 1910, 23,179 tons; 1911, 23,534 tons; 1912, 19,249 tons; 1913, 18,833 tons.

GERMAN COLONIAL RUBBER.

Supplies from the German colonies have been as follows:

	German East Africa	Togo	Kamerun	German New Guinea	Samoa	TOTAL
1891..... tons	189	53	377	—	—	619
1909.....	474	147	1,518	—	—	2,139
1912.....	754	166	2,541	3	9	3,473

These figures, it is remarked, show the increasing supplies received by Germany from the African colonies of that country. It was estimated in 1910 that about 60,000 acres had been planted with rubber at various points.

LABOR CONDITIONS.

The peaceful and harmonious relations existing in the German rubber industry between employers and employed are illustrated by the large number of workers who have celebrated their silver jubilee, while a much larger number have been awarded bronze medals for ten years' service. Workmen's insurance and various pension fund arrangements have been largely carried into effect, while workers' dwellings are prominent features of the system in force. Strikes and other forms of labor disputes are thus rare in the German rubber industry; there being a mutual recognition of the fact that successful results are only to be achieved when satisfaction exists on both sides, with due regard to the enforcement of the discipline necessary in large plants.

In the opinion of competent observers the German rubber industry is resting on a secure foundation and is well equipped for meeting competition with its rivals in foreign countries, the attainment of the highest possible capacity of its manufacturing plants forming its most important object. This aim it hopes to reach through the technical knowledge, perseverance and enterprise which have marked its efforts in the past.

SPECIAL RUBBER GOODS FOR THE SUMMER SEASON.

German manufacturers are giving particular attention to rubber goods suitable for use in the usual summer outings—such as bath accessories, for instance, for the older people, and toys which children can use at the beach. One article in particular might be mentioned—a seat made of rubberized material for protection—to ward off rheumatism—when people are sitting on the wet sand or damp ground. This rubberized seat is thin and light, and can easily be carried in the pocket.

Some Rubber Planting Notes.

DR. ARENS' JOURNEY OF RUBBER INVESTIGATION.

THE last number of the "Mededeelingen," or "Communications," of the Testing Station at Malang, Java, contains an interesting account of the journey undertaken last spring by Dr. P. Arens, the assistant director of rubber cultivation. At the meeting of the Testing Station on February 25 it was decided to send Dr. Arens on this tour of inspection, from which he returned in the early part of the summer.

His object being to collect information of value to Java planters, three weeks were allotted to Ceylon, conditions in both islands being similar and planters in both cases suffering under the same disadvantages. Hence the records and impressions of his visit to the last named island occupy a prominent place in his report, the comparison between Ceylon and Java being constantly in view. Other portions of his narrative deal with Sumatra, the Malayan peninsula and other centers of interest.

The information gathered with regard to the different countries visited affected systems of cultivation, catch crops, manuring, destruction of insects, tapping, renewal of bark, preparation, smoking, etc. Special attention was likewise devoted to the sorting and packing of rubber, while the natural features of the respective countries are also referred to in connection with their influence on its growth.

THE TREUB LABORATORY AT BUITENZORG, JAVA.

The opening early this summer of the new Treub Laboratory at the Botanic Gardens, Buitenzorg, Java, has recalled the connection of Dr. Melchior Treub with that institution, which had lasted since 1880, when he was appointed director. He had up to that time devoted close attention to nature in its various forms, both abstract and concrete.

He then invited a noted German scientist, Professor H. Graf zu Solms Laubach, of Göttingen, to assist him. This expert remained at Buitenzorg from October, 1883, to March, 1884. As a result of these joint efforts, the "Foreign Laboratory" was opened in May, 1885. During the first years the laboratory was under the special control of Dr. Treub himself, but when in 1890 Dr. M. Janze became attached to the Botanic Gardens as botanical expert, Dr. Treub gave him immediate charge of the laboratory.

In 1887-1888 Dr. Treub succeeded in obtaining a grant from the Amsterdam Royal Academy of Science; the interest of which fund was devoted to sending every two years a botanical expert to Buitenzorg. The first of these was the well-known Professor Went. In the course of years many botanists journeyed to Buitenzorg to continue their studies and investigations.

In 1905, after a quarter of a century's service, Dr. Treub was promoted to the post of Director of Agriculture in Java, which he held until 1909. His death occurred in 1910.

While in his late life he had less to do with pure science, yet it always occupied the first place in his thoughts.

The decision to erect a new and suitable laboratory as a memorial to him was taken on Dr. Treub's death on October 3, 1910, but has only just been carried into effect.

PLANTATION RUBBER ACREAGES.

A South Indian estimate shows the following acreages under plantation rubber in 1913: Malaya, etc., 500,000; Java, 150,000; Sumatra, etc., 250,000; Ceylon, 220,000; India and Burma, 50,000; German Colonies, 60,000; Borneo, 20,000; total, 1,250,000 acres. The totals for previous years were: 1910—767,000; 1911—865,000; 1912—987,000. It will thus be seen that the increase shown by 1913 over 1912 is about 27 per cent.

JAVA RUBBER EXPORTS.

Official statistics show the following comparative rubber exports from Java and Madura:

	January-April.	
	1913	1914
Hevea	607 tons	1,147
Ficus	31	23
Ceara	11	15
Castilloa	13½	17
Other classes	30	8
Gutta percha (plantation)	4	15
" (pressed leaves)	198	225
Jelutong	13	11

RUBBER PLANTING IN MALAYA.

The following statistics illustrate the relative importance of the rubber acreage in various parts of the Malayan Peninsula:

	1912.	1913.	1913.
	Acreage.	Acreage.	Output in Tons.
Federated Malay States.....	399,197	433,324	21,229.17
Straits Settlements	94,263	111,316	6,047.14
Johore	91,827	117,022	1,645.70
Kelantan and Kedah.....	34,837	45,373	246.18
Perak	1,497	1,510	Not yet producing
	621,621	708,545	29,168.19

In 1912 there were in all 255,912 workers employed on the Malayan estates; the number having increased by 1913 to 282,354.

DUTCH-INDIAN IMPORT TRADE.

In addressing the Dutch Commercial Association, during the recent summer meeting at Zwolle, Holland, Mr. D. Ilde Vries stated that the population of Java, now over thirty millions, is increasing at the rate of half a million a year. Sumatra is also rapidly developing, with further development expected on the completion of the railway now under construction, which passes through a fertile district. A small portion of this line is already in operation.

The amount of imports into Dutch India for the last few years equalled in millions of dollars: 1907, 99; 1908, 112; 1909, 113; 1910, 138; 1911, 160. The speaker urged this development as indicating the growing importance to Europe of the Dutch Indian markets.

RUBBER COMPANIES IN SOUTHERN INDIA.

By the courtesy of the Department of State at Washington a tabular statement has been received showing the history of some 19 South Indian sterling companies and 4 rupee companies.

Taking them in the order of the annual quantity produced, the most important concern is the Rani Travancore Rubber Co., Limited, registered in 1910 for the purpose of taking over about 3,600 acres, of which about 3,000 acres have been planted with Pará rubber. The yield for the year 1913 was 513,813 pounds, produced at about 1s. 3½d. (31.16 cents) per pound f.o.b.; the estimate for 1914 being 675,000 pounds. The Malayalam Rubber & Produce Co., Limited, for 1913 yielded 263,664 pounds of rubber, and estimates the current year's product at 482,000 pounds; while the Travancore Rubber Co., whose output for last year was 123,083 pounds, anticipates for 1914 about 150,000 pounds.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

RUBBER CULTIVATION IN BURMA.

By C. G. Williams, Para.

THE rubber growing districts are Lower Burma, including Tenasserim, which is subdivided into smaller districts e. g., Amherst and Maulmain, Attaran, Lower Mergui, Tavoy and Victoria Point, some 200 miles further south.

The soil is principally a light or dark reddish yellow friable sandy loam, with occasional districts which have a subsoil of laterite. The ground is slightly undulating and in nearly all cases is protected from the southwest monsoon by high ranges of hills varying from 700 to 1,000 feet. The land is easily drainable.

The rainfall varies slightly in different districts. The yearly average is as follows:

Tenasserim North	110 inches.
Maulmain and Amherst.....	150 "
Attaran	180 "
Mergui	120 "
Tavoy.....	200 "
Victoria Point.....	160-180 "

There are two seasons: December to April, the dry or cold season, and May to November, the wet or monsoon season. There is no fear of a prolonged drought. The driest months are February and March, when there is very little or no rain—say about 2 inches per month; but there are heavy Scotch mists and dews which compensate for the lack of rain. The climate in all districts is very healthy, more so than in the Malay States, the temperature being 88.8° F. in the day time (midday) and 74° F. at night—the mean temperature for the year being about 80° F.

Labor is principally Indian. Koringhis and Ovriyas are very plentiful. Burmese and Chinese contractors are usually engaged for felling, etc. The scale of pay is about half the price paid in the Malay States, varying from \$4 to \$5 United States gold. The highest rate is \$7 gold per month. This is in Victoria Point, the extreme south end of Burma.

Land is granted for a lease of 30 years, with a renewal of 20 years, as well as 8 years' exemption from taxes. No fixed tax has been levied as yet by the government. The matter is under discussion among the planters' associations.

The growth of trees is excellent, quite as good in every way as in the Malay States. All trees can be tapped in 4 years from date of planting, the girth average 3 feet from the ground being 18 to 24 inches and more if planted 20 x 20 feet. There are trees 15 years old having a girth average of 60 to 80 inches, and some trees 35 years old 80 to 90 inches and over, yielding 12 to 15 pounds per tree per year; the average yield for 4 year to 6 year-old trees being 1½ pounds to 3 pounds per tree per year. The rubber produced is diamond pattern, sheet or biscuit (smoked) and blanket crêpe (smoked). The sheets are even, of uniform color and excellent quality.

Tapping can be done now practically all the year round by using patent gutters placed over the vertical channel and oblique cuts. It is principally done by Burmese girls, as they are not migratory like other classes of labor, and are cheaper and more satisfactory.

All planting is stump planting about 9 months to 1 year old. The plants attain a height of from 10 to 12 feet and a girth average of 2½ to 4 inches in one year from date of planting.

Transportation is fairly good in all districts. Those near the coast have fortnightly steamers running to Rangoon. Inland, the communication is by carts or boats to the railway.

Capitalization is from £22 sterling to £25 per acre to bring to bearing, say \$110 gold to \$125 or \$130, the latter price being at Victoria Point, where labor is dearer—whether contract or otherwise. Maulmain and Tenasserim are the cheapest. The

total acreage under cultivation, including native holdings and private estates, is about 34,000 acres.

The following is an extract from a report by Mr. A. B. Milne of Malay States fame: "Each successive trip to Lower Burma serves to increase my opinion of that country as a rubber producer, the rubber produced being the best hand made, second grade rubber I have yet seen. The clearings have exceeded my most sanguine expectations and are remarkably good in comparison with the Federated Malay States." Mr. Maurice Maude has also visited the country and expressed his opinion about its suitability for rubber cultivation. The average cost of production is about 1s. 6d. to 1s. 10½d. (36.49 cents to 45.61 cents) per pound.

REPORT OF GOLD COAST GOVERNMENT FOR 1912.

ACCORDING to the latest report of the Gold Coast Government—for 1912—applicants during the year received of Para rubber 39,407 plants and 347,890 seeds, and of *Funtumia* 1,560 plants and 900,000 seeds. The distribution of Para rubber seeds showed a marked increase on that of the previous year, and it was anticipated that larger supplies of Para plants would thus be available during the next season. The total quantity of rubber sold was 2,808 pounds, realizing an average of about 4s. 3d. (103.38 cents) for sheet. Exports of rubber, however, showed a very large decline.

Fair progress continues to be made by the Para rubber on the several experimental stations, the average annual yield of 30 trees at four centers being 3¾ pounds per tree, or nearly half a pound more than in the previous year. The yields from *Funtumia*, though limited through a misunderstanding, were among the best yet obtained from experimental tappings on cultivated trees and are considered to give promise of better returns as the trees increase in age. The *Funtumia* has given over 56 per cent. of its total yield at the first tapping, in contrast with Para, where the quantity of latex tends to increase after the first tapping, this development being known as "wound response."

European plantations were making fair progress, the Para rubber growing rapidly, but *Funtumia* showing only a slow rate of growth. The planting of the latter variety on cocoa farms is becoming quite general in the central province of Ashanti, but no progress has been made in tapping the trees and preparing the rubber for market.

Besides the report of Mr. W. S. D. Tudhope, Director of Agriculture, separate reports in the form of appendices were submitted by the Government entomologist, the traveling inspector and the agricultural stations of Aburi, Tarquah, Coomassie, Asuantsi, Tamale and Kibbi.

The following table shows the exports of rubber from the Gold Coast Colony during the ten years, 1903-1912:

Years.	Pounds.
1903	2,258,981
1904	4,013,837
1905	3,633,106
1906	3,649,668
1907	3,549,518
1908	1,773,243
1909	2,764,190
1910	3,223,265
1911	2,668,667
1912	1,990,699

Mr. Tudhope expresses the opinion that it will be some years before much rubber will be produced on native Para plantations.

NEW AGRICULTURAL SCHOOL IN JAVA.

In addition to the existing agricultural schools at Wonosobo, Poerworedjo, Soreang and Ploembon, a new school of that character is projected for Poerwokerto. Funds have been donated by the Resident at Banjoemas, who has given the equivalent of \$12,800 towards the establishment of the school, instruction at which will be of a special character.

RUBBER IN FRENCH INDO-CHINA.

FRENCH Indo-China includes Tongking, Annam, Cochinchina and Laos, acquired by France through conquest, as well as Cambodia, Angkor, Battambang and Kouang-teheou-Wan, ceded under diplomatic agreements. Cochinchina is a colony of France (capital Saigon), while the other states of Indo-China are protectorates of that country.

Cochin-China has a more extensive cultivation of rubber than any of the other portions of French Indo-China, lying chiefly between 8 degs. and 12 degs. north latitude, and from 101 degs. to 105 degs. east longitude. Within the last twenty years the natural healthfulness of the country has been further improved through the works of sanitation executed by the French authorities, which fact has encouraged colonists to remain there, instead of returning to France. Cochinchina is subject to the influence of the monsoons, and has a rainy season from May to October, followed by a dry period. It is watered by the Mekong, a river 2,000 miles in length, with numerous tributaries. The country is divided into three sections. In the southern and western portions the land is low, while to the east is a slightly more elevated district suited for rice, tobacco and cereals. The far eastern and the northern portions have distinctly higher lands not inundated in the rainy season, where rubber is grown in the gray and red soils.

According to the latest number of the "Annals of the Rubber Planters of Indo-China," published in connection with the London rubber exposition, the native population is descended from Annamite immigrants, and has perpetuated their national characteristics of obedience to authority and respect for foreigners speaking their language.

From the reports brought back from Europe by residents of Cochinchina there seems to be an impression that the *Hevea Brasiliensis* could not grow in the last-named country. It is admitted that Cochinchina has been outstripped in this matter by Ceylon, Java, Sumatra and the Malay peninsula. This situation is attributed to the fact that those countries had not the resource furnished by rice in the case of Cochinchina, which was developed without regard to rubber and other remunerative forms of cultivation that had received attention in neighboring countries. On this point there seems to have been a lack of encouragement on the part of the government, which obtained a satisfactory revenue from rice.

Rubber was planted at a relatively early date by M. Belland, a French colonist, who from a modest plantation of 15,000 trees realized in 1910 (the second year of his tapplings) a net profit of nearly \$20,000. This fact encouraged many Frenchmen to take up the cultivation of *Hevea Brasiliensis*. The commencement made in 1907 and 1908 by the Suzannah and Xatrach estates was followed by the establishment of many small companies. These companies were in most cases founded with the savings of colonists and their plantings varied from 10,000 to 50,000 trees each. Cochinchina is the land for the small planter. European capitalists are moreover now taking interests in plantations. Both European and native planters have taken up *Hevea Brasiliensis*.

The north and northeast of Cochinchina (already referred to as being favorable for rubber) contain a vein of gray and red clay about 70 miles long by 25 miles wide, forming an ideal rubber country. Results obtained from planting in these soils have been satisfactory in both cases. The estate of M. Belland and the government agricultural station of Ong-Zem, which produced the first rubber from Cochinchina, are on gray soil, while the others named are on red clay.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

NOTES FROM DUTCH GUIANA.

By Our Regular Correspondent.

IT is rumored here that a French combination with headquarters at Paris has formed a company to exploit certain wild rubber tracts situated in the Para district of the colony, and that the capital to be invested is 5,000,000 francs (\$965,000). These lands have long been in the market, and at one time stood a good chance of becoming the property of an American concern, but the sudden and unexpected change in rubber prices damped their ardor, and they let go. From the prospectus issued by this company we gather that the tract contains 150,000



COLONIAL RAILWAY PASSING THROUGH WILD RUBBER AND BALATA TRACTS, DUTCH GUIANA.

acres, situated in the neighborhood of the Colonial Railroad, which will greatly facilitate transport and render the opening up of the tract inexpensive.

In my last correspondence mention was made of the waiting game of the planters; and their policy is not to be criticised when it is considered that by waiting a few years longer the returns of rubber per tree will be almost doubled.

In dealing with the rapid growth of rubber trees in Dutch Guiana, Professor J. B. Harrison, Director of Science and Agriculture, on a recent visit to Surinam said he was amazed to see how the rubber trees had grown. At plantation Mengenstand he found trees with a girth of from 55 to 60 inches which he saw in 1910 when they were just taken from the nurseries and planted. Professor Harrison was no less pleased to see the healthy and flourishing condition of the cocoa and coffee trees on this estate as well as on others he visited during his brief stay in the colony; and on his return to Demerara he was not silent regarding his impressions of rubber, cocoa and coffee in Dutch Guiana. It ought to be now recognized by all that the soil, climate and rainfall in Surinam are all that can be desired for the cultivation of rubber and other tropical products.

Balata has been brought into town in quantities, the largest parcels arriving during the past few weeks, and the customs have reported a production of 198,650½ kilograms (437,031 pounds) to June 30, 1914, as against 195,713 kilograms (430,569 pounds) for the same period in 1913. The weather still continues favorable for operations and by the end of September the 1914 crop will have been gathered.

In the month of June alone the balata produced was 71,419 kilograms (157,122 pounds), as against 55,081 kilograms (121,198 pounds) in June, 1913. It is a well known fact that a less number of bleeders are operating this year, owing principally to the strict and correct contracts they are called upon to enter into, and the reduction in advances.

The Chamber of Commerce in its annual report, dealing with the balata industry says: "The receipts in the towns were higher in 1913 than in any previous year, despite the fact that

prices were lower, as is shown in the table hereto annexed:

1913.	Local Price per Kilo. (2.2 Pounds.)	New York Price per Pound.
January	3 85	50 72
May	3 40	0 66
July	3 12	0 60
September	2 75	0 50 50
October	2 62	0 70 0 61
November	2 60	0 64 0 67
December	3 03 30	0 62 0 66

Since January, 1914, the price has been rising. The shipments are made chiefly to Holland, which takes 57 per cent. of the total. British countries receive 23 per cent. and the United States 17 per cent. The quality has suffered from the drought of 1912 but is improving slowly and surely."

It is interesting to report that the United States took from this country in the year 1913 produce amounting in value to 3,396,037 florins (\$1,358,414), against 3,749,045 florins (\$1,499,618), the value sent to the mother country. Great Britain received Surinam products valued at 1,119,707 florins (\$447,882). The United States alone is responsible for 93 per cent. of the cocoa crop of Dutch Guiana, and this accounts for the better market there compared with prices at Amsterdam and in France, which take only 3 per cent. each of bulk of cocoa exported from the colony.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent

WEATHER CONDITIONS BETTER EXPORT FIGURES.

THE weather conditions during the past month have on the whole been very favorable for the balata industry. Although signs are not wanting that the rainy season is coming to an end, we are still experiencing some refreshing rains. The short rainy season was conspicuously brief again this year and the long rainy season came so late as to cause some misgiving, but when it did come it was found to bear a greater similarity to the traditional rainy season than has been the case for some years, and during the past three months the rainfall has been persistent and abundant. Reports from the Rupununi district, where a large proportion of our balata is now secured, are consequently encouraging. One superintendent alone estimates that he will get a return of 200,000 pounds, providing that the men are prepared to work. Up to July 30 the exports from this district have been 379,661 pounds, as compared with 299,165 pounds last year. These are the latest figures published.

THE CONSOLIDATED REPORT FOOD FOR THOUGHT.

The annual report of the Consolidated Rubber & Balata Estates, Ltd., has been received here with mixed feelings. The company is carrying on operations in the colony on a large scale, and if it were to withdraw the importance of the balata industry would sustain an appreciable diminution; consequently the fact that there was no profit to provide for writing down the assets, especially preliminary expenses, has caused some misgiving. It was explained at the annual meeting that the large profit anticipated had been completely extinguished owing to the unexpected fall in the price of balata, but one of the shareholders pointing out that the price of balata in England was in excess of that obtained by the directors, a Committee of Inquiry was appointed. The important point was the announcement that the local manager, A. F. White, had reduced the cost of production to 49 cents per pound, as compared with 60 cents in 1912 and 73 cents in 1911. It was contended that if the market price had been obtained by the directors a difference of \$115,000 would have resulted, and had not the cost of production been reduced by prudent management and organization locally, the company would have come out very badly on the wrong side. Forty-nine cents is a fairly low cost of production when it is recollected that many of the company's grants lie so far in the

hinterland. By the construction of a frontier railway this cost will be still further reduced. It is the cost of transport—the slow progress made over long distances, on account of the difficulties of navigation in our cataract-studded rivers—that leaves such a narrow margin of profit for our balata corporations.

THE HILL'S ESTATE TEMPORARY SUSPENSION OF OPERATIONS.

Some consternation was caused locally by the announcement that the Bartica Agricultural Estates, Ltd., had temporarily suspended operations at the Hill's Estate owing to the failure of the sisal hemp cultivation, because this plantation represents about the most promising experiment in rubber cultivation that the colony has yet to show. A considerable acreage is under cultivation and all the rubber is reported to be in a flourishing condition. It is hoped that when this estate makes good it will be the means of inducing other capitalists in the United States, and elsewhere, to try their fortunes with this colony's undoubtedly great possibilities. The report, however, was soon forthcoming that the suspension of operations was likely to be brief, and that it related only to the extension of the cultivation, which ceases for the present. The trees on the 750 acres under rubber are in good condition with regard to height, girth and freedom from grass and weeds. On a few hundreds of these 750 acres the trees are already tappable and the yearly returns are most satisfactory, comparing very favorably with those obtained in other countries. The trees on an area of over 400 acres have been felled, and as soon as the season is favorable for the purpose the clearing and stocking of this area will take place by way of preparation for the reception of the plants. There is also in connection with the Hill's Estate a beautiful nursery, containing more than 70,000 seedlings of the *Hevea brasiliensis*, which will be used in the planting of the area under preparation.

THE RUBBER EXHIBITION: PRIZES FOR THE COLONY.

The colony enjoyed a considerable success at the recent Rubber Exhibition held in London. The British Guiana stall was generally admired and it received the West India Committee's prize for the best comprehensive exhibit of a Permanent Exhibitions Committee, while the Hill's Estate won the West India Committee Silver Cup for the best sample of rubber by an individual exhibitor. Mr. Algernon Aspinall, writing to Professor Harrison, Director of Science and Agriculture, says: "Your stand was undoubtedly the finest. A notable feature was the exhibits of products on a commercial scale. The whole tone of the exhibit was admirable. Next time you must make a still larger display. British Guiana is a colony which should really benefit from partaking in these exhibitions." Mr. C. W. Anderson, Forestry Officer, the colony's Commissioner at the Exhibition, writing to the Professor, said that the visitors' book of the West Indian Courts kept in the British Guiana Court was signed on the opening day by His Royal Highness Prince Arthur of Connaught, who expressed his interest in the exhibits and particularly in the balata exhibits, stating that he had often heard of the product but never before had seen it. The Lord Mayor of London paid a visit in state to the Exhibition on the 26th of June and signed the visitors' book. The Exhibition will do the colony much good in the outside world and will emphasize our mistake in failing to send a display to the New York Exhibition. A very comprehensive exhibit is being sent to the Toronto Exhibition, including sugar, cacao, coffee, rice, rice meal, rum, cocoanuts, coconut oil, molasquit, kola, cassareep, castor oil seed, balata, rubber, and arrow-root. The balata exhibit includes 108 pounds by the Department of Lands and Mines, and the rubber exhibit samples from the Issorora Rubber Station of the Onderneeming School farm.

EUROPE'S DESOLATION AMERICA'S OPPORTUNITY.

THE INDIA RUBBER WORLD

Dear Sir: In the midst of the most tremendous, devastating and inexcusable war that the world has ever known, it seems shocking to persons of refined spirit that any of us should be thinking of how its existence may turn to our personal advantage. But the war is not of our making. It has inflicted and will yet inflict upon us losses which cannot be escaped. It has inflicted upon other neutral nations great losses of commerce. The losses of these nations, as well as our own, may be modified by increased commerce between them and us. Other nations, having wildly rushed to war, the need for the goods they no longer can supply must be met by ourselves and other neutral peoples.

There is no harm, but both reason and duty in our making the present an occasion for extending our commerce with both belligerents and neutrals. It is not to be forgotten, moreover, that our diminished prestige on the sea dates from the time when our own land was torn by the horrors of civil war. Our ships were swept from the sea and a system of high duties, for the express purpose of discouraging imports, was made a part of our fiscal policy. European traders rushed in to take the advantage we had lost and they retained it until the day that Germany launched her thunderbolts of war.

Not in bitterness, but with justice, we recall that throughout Europe our great misfortune was welcomed as "marking the end of the republican experiment." Our own sentiments, in the midst of the horror which is now shaking the world, are those of profound grief. No American, worthy of the name, can feel otherwise. But our European brothers have abandoned peaceful commerce for the dangers of war. Their trade is derelict. Humanity, as well as self-interest, requires that Americans should do their part to see that the commerce of the world shall still go on.

T. M. U.

OXIDE OF IRON PAINT IN METAL WORK

The Westmoreland Chemical & Color Co., of New York and Philadelphia, received a little while ago a communication from C. S. McNally, a contracting painter, in which he gives his opinion of oxide of iron paints (which are manufactured by this company) in the following paragraph.

"It is my opinion that if oxide of iron paints were more generally specified for the painting of steel structures today, in place of many of the compounds and mixtures that are used, the problem of preservation would be much nearer solution and at a decidedly lower cost."

RUBBER NOT CONTRABAND OF WAR.

According to article 28 of the general agreement at the London Naval Conference, rubber is one of the articles which cannot be declared contraband of war—that is, unless more than one-half of the cargo of the vessel in which it is being transported shall consist of contraband.

Articles of interest to the rubber trade which come under the contraband class are balloons and air craft of all kinds, their component parts and all accessories and articles recognizable for use in connection therewith, also clothing, fabrics for clothing and boots and shoes suitable for use in war.

A report comes from an American consul at Bradford, England, that a new method of waterproofing fabrics has been placed on the English market. Among the advantages claimed for it are that it requires no special machinery, stands any heat for finishing purposes and does not alter the feel of the material while rendering it impervious to moisture. Samples of cloth treated by the process may be had from the Bureau of Foreign and Domestic Commerce, Washington.

THE SITUATION IN MEXICO.

AN American who has resided in Mexico for many years and been successful in his operations there, including rubber planting, was obliged some months ago to leave his plantations and go to Vera Cruz, where with many other refugees, he could be under the protection of the American flag. The following description of the Mexican outlook taken from a letter addressed to the editor of THE INDIA RUBBER WORLD and received a few days ago, is highly interesting, as it comes from a man whose familiarity with the Mexican situation should enable him to form an accurate opinion:

"Politically and economically the country has reached the depths of degradation and ruin—treason in high and low places—political dishonesty, and so on down to savage murder, rapine, torture and pillage. *Non, si mihi sint centum lingue centumque ora et vox ferrea possim comprehendere omnes formas scelerum* (If I had a hundred tongues, a hundred mouths and a voice of iron, I could not enumerate all the different forms of crime) that have been committed here in the name of liberty; and worst of all one is driven to the conclusion that there is no choice in sides, whether it be Federal or Rebel, or, as the latter please to insist, Constitutional. This is not the opinion of a day. A score of years went to its making. It is idle to talk about unaided reconstruction, regeneration by free or voluntary effort upon the part of the people. The trouble is, there is no standard of ethics to work by, or if there be, the racial temperament is not equal to the strain. Many have said it is owing to lack of literacy. Don't think it; the percentage of literacy—perhaps 20 per cent. of the whole population—is notorious for its crimes; 20 per cent. more would only increase the problem, as the really most trustworthy is the pure Indian untainted by contact with the educated. The point is, literacy is not directed to the proper ends—merely an engine for more clever machinations, both in social and political life—and I repeat, unaided there is no hope within human possibilities.

"This means direction for a series of years by some force capable of insuring compliance with any form of government set up here. That it must be an exterior force is obvious. Who is going to do the job? Merely moral persuasion from Washington intensifies the detestation felt by nearly all Spanish America for the United States. The opposite is wonderfully evident in Vera Cruz, where at the time of occupation and for a short time afterward you could not conceive of a more wild, frenzied, gesticulating lot of lunatics cursing and damning the hated 'Gringo.' Today all is order, peace, justice, discipline; good money in circulation, and practically everybody happier than they have ever been in their lives—saving a few rich harpies, whose wings have been clipped. Fines for misdemeanors are levied and collected impartially. That is a revelation to Mexicans. In other words, their literacy is truly directed to the proper end, but, as you see, force is at the back of it and, more to the point, right in the spot; so we all sadly enough look forward to the day—we fear all too soon—when it will be removed."

ASBESTOS PRODUCTION.

The report of J. S. Diller of the United States Geological Survey on the production of asbestos in 1913 gives the output of the United States as 1,100 short tons. According to this report, the area opened up in Arizona during the year is producing a remarkable fibre, which, when twisted into yarn 0.03 of an inch in thickness, will support a weight of 15½ pounds. It is also said to be superior for insulation purposes, its iron content being somewhat lower than the asbestos of Canada—where most of the world's supply of this mineral is obtained—which is found in serpentine rock derived from peridotite, whereas the Arizona asbestos is associated with limestone.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JULY 7, 1914.

- N** 1,102,423. Cushioned wheel. G. T. McMillan, Bushnell, S. D.
 1,102,487. Treatment of caoutchouc, gutta percha, and like substances. J. L. Liska, assignor to one-half to A. K. Liska, France.
 1,102,598. Non-skid vehicle wheel. J. Liska, assignor of one-half to A. K. Liska, France.
 1,102,630. Composition, and process of manufacturing the same. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.
 1,102,631. Plastic composition and method of making same. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.
 1,102,632. Enamel lacquer or varnish composition. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.
 1,102,633. Insulating composition. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.
 1,102,634. Plastic phenolic condensation product and process for forming the same. J. W. Aylsworth, East Orange, N. J., assignor to Condensite Co. of America, Glen Ridge, N. J.
 1,102,690. Vehicle wheel tire. I. M. Sartain, Tracy City, Tenn.
 1,102,789. Apparatus for cutting, grinding, mincing or pulverizing rubber. J. Ogden, Manchester, assignor to A. Denton, Ingleside, Marple, county of Chester—both in England.
 1,102,811. Elastic tire for vehicles. J. Spyker, Amsterdam, Holland.
 1,102,860. Tire for wheels. W. H. Blake, Jersey City, N. J.
 1,102,914. Supplemental tire for vehicle wheels. C. Hastings, Atchison, Kan.
 1,102,938. Blow-out patch. J. H. Marvil, of V. & I. H. Downs, Laurel, Del., assignor of one-third to J. D. Marvil and two-thirds to S. D. Marvil, Laurel, Del.; S. L. Marvil and F. B. Sirman executors of the estate of said J. D. Marvil, deceased.
 1,102,939. Tire repair patch. J. H. Marvil, of V. & I. H. Downs, Laurel, Del., assignor of one-third to J. D. Marvil and two-thirds to S. D. Marvil, Laurel, Del.; S. L. Marvil and F. B. Sirman executors of the estate of J. D. Marvil, deceased.
 1,103,003. Detachable wheel rim. R. Haupt, Hanover, Germany.

Trade Marks.

- 70,348. Estate of C. F. Goepel, New York, N. Y. The words *Established Quality and Efficiency* in a fancy design. For rubber buttons.
 70,658. Gem Fountain Pen Corporation, New York, N. Y. Representation of a fountain pen in a simplified form. For fountain pens and the parts thereof.
 70,659. Gem Fountain Pen Corporation, New York, N. Y. The word *Gem*. For fountain pens and the parts thereof.
 71,081. Woonsocket Rubber Co., Woonsocket, R. I. A cameo representing a head. For rubber boots and shoes.
 76,579. The Eagle Kant-Slip Patch Co., Cleveland, Ohio. An illustration of an eagle carrying a tire in its claws. For rubber adhesives, patches, etc.
 76,707. Rubber Sundries Co., Cleveland, Ohio. A diagonal black band on which the words *Black Band* appear in a circular space. For rubber water bottles, fountain syringes and ice caps.
 77,657. C. J. Hickey, New York, N. Y. The words *First* and *Best* for hose supporters.
 78,561. Mulconroy Co., Inc., Philadelphia, Pa. The words *Safety-First*. For hose fittings.
 78,846. Revere Rubber Co., Providence, R. I., and Chelsea, Mass. The words *Spring-Step* in a semicircle. For rubber soles for boots and shoes.
 78,907. Hood Rubber Co., Watertown, Mass. The word *Seaside*. For rubber boots and shoes and rubber soled shoes.

ISSUED JULY 14, 1914.

- 1,103,114. Rubberized silk supporter. J. Warren, McComb, Ohio.
 1,103,148. Lady's skirt with elastic plaited part. A. Malsin, New York, N. Y.
 1,103,181. Braiding machine. W. E. Elliott, Grand Rapids, Mich.
 1,103,280. Beating engine. R. S. Fram, Vandalia, Ill.
 1,103,308. Vehicle wheel. F. H. Messenger, New York, N. Y.
 1,103,349. Fountain pen. W. L. Chapman, New York, N. Y.
 1,103,359. Method of making sponge rubber. J. Huebner, Chicago, Ill.
 1,103,443. Drying machine. O. S. Sleeper, assignor to Buffalo Foundry & Machine Co.—both of Buffalo, N. Y.
 1,103,464. Instep support. J. W. Arrowsmith, Morristown, N. J.
 1,103,465. Bunion shield and corrector. J. W. Arrowsmith, Morristown, N. J.
 1,103,478. Vehicle tire. O. W. Britt, San Francisco, Cal.
 1,103,637. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York, N. Y., one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York, N. Y.
 1,103,642. Wheel tire. A. M. Zimmers, Baltimore, Md.
 1,103,670. Air cushion for rubber stamps. C. C. Gibson, Buffalo, N. Y.
 1,103,684. Atomizer. E. R. Pettit, Philadelphia, Pa.
 1,103,813. Vehicle wheel. T. B. Murray, Scotstoun, Scotland.
 1,103,848. Blow-out patch. C. L. Smith, Brooklet, Ga.

- H. W. Hancey, Hutchinson, Kan.
 1,103,877. Pneumatic tire. H. F. Heycock, Dunedin, New Zealand.
 1,103,914. Cushion heel shoe. C. C. Eaton, assignor to C. A. Eaton Co.—both of Brockton, Mass.

Trade Marks.

- 67,457. Franklin Caro Co., Richmond, Va. The word *Caro*. For chewing gum.
 76,250. Montgomery Ward & Co., Inc., New York and Brooklyn, N. Y.; Chicago, Ill.; Fort Worth, Tex.; Kansas City, Mo., and Portland, Ore. Diamond shaped design formed of two triangles enclosing the letters *W*. For rubber belting, leather belting, etc.
 76,815. J. P. Gallagher, Philadelphia, Pa. The word *Galtwin*. For rubber compound, etc.
 77,115. The Bee Bee Confection Co., Dayton, Ohio. An illustration of a fan between the words *Fan* and *Tan*. For chewing gum.
 77,949. Converse Rubber Shoe Co., Malden, Mass. The word *Tuff-E-Nuff*. For rubber tires, casings and inner tubes.
 79,153. Imperial Rubber Co., New York, N. Y. The word *Innovation*. For electrical apparatus, machines and supplies.

ISSUED JULY 21, 1914.

- 1,103,960. Artificial limb. J. E. Hanger, Jr., St. Louis, Mo.
 1,103,967. Drainage tube. H. E. Hughes, Baltimore, Md.
 1,104,074. Air valve for pneumatic tires. F. P. Root, Akron, Ohio.
 1,104,078. Twisting machine. W. F. Smith, Chicago, Ill., assignor to Western Electric Co., New York, N. Y.
 1,104,108. Garment stay. J. R. Dean, North Girard, Pa.
 1,104,179. Photographic ray-filter, with soft rubber lining ring. W. F. Folmer, assignor to Eastman Kodak Co.—both of Rochester, N. Y.
 1,104,186. Pneumatic tire. H. B. Gillette, Grand Rapids, Mich.
 1,104,252. Vacuum cup releasing device for lamps. W. P. Dunham, Los Angeles, Cal.
 1,104,267. Skirt with elastic strips in waist band. M. Mayers, New York, N. Y.
 1,104,296. Stock shell for winding fabrics. W. F. Gammeter, Cadiz, Ohio.
 1,104,343. Cushion shackle for running gear of vehicles, comprising a plurality of rubber pads. A. Buonicore, New York, N. Y.
 1,104,382. Life preserver. J. M. Pineau, Quincy, Mass.
 1,104,426. Tire. F. Keller and H. Cogan, Paterson, N. J.
 1,104,441. Surf coaster. A. N. Nelsen, Longbeach, Cal., assignor of one-half to H. J. Woods, Hollywood, Cal.
 1,104,508. Hose construction. C. K. Huthsing, St. Louis, Mo.
 1,104,514. Eraser for lead pencils. A. Kilstrom, Providence, R. I.
 1,104,566. Fountain pen. R. W. Springer, Springfield, Ill.
 1,104,567. Fountain pen. R. W. Springer, Springfield, Ill.
 1,104,607. Perfume atomizer. F. Berger, Baltimore, Md.
 1,104,625. Skirt with elastic gore. E. Caplan, Philadelphia, Pa.
 1,104,659. Syringe Nozzle. F. A. Gordon, Spokane, Wash.
 1,104,664. Supporting belt. E. Guggenheim, assignor to M. W. Schloss Manufacturing Co.—both of New York, N. Y.
 1,104,674. Belt for catamenial sacks. C. Johnson, Seattle, Wash.
 1,104,722. Vulcanizer. O. Walter, Hanover, Germany.
 1,104,744. Process of treating Pontianak. A. R. Ellison, Brookline, Mass.

Trade Marks.

- 78,123. A. R. Garrod, New York, N. Y. The word *Pediforme*. For shoes of rubber, leather, etc.
 78,213. Wright & Ditson, Jersey City, N. J. The word *Ringer*. For golf balls.
 78,519. The B. F. Goodrich Co., New York, N. Y. The word *Imit*. For rubber hot water bottles and fountain syringe bags.
 78,696. Ferguson Waterproof Co., St. Louis, Mo. The words *Water King*. For waterproof coats, jackets, ponchos, etc.
 78,919. L. Candee & Co., New Haven, Conn. A narrow embossed band on the upper margin of a boot or shoe. For rubber boots and shoes.
 78,963. W. A. Rockrohr, Chicago, Ill. The words *Tite Wad*. For rubber putty.
 78,974. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Fatima*. For chewing gum.
 78,975. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Recruit*. For chewing gum.
 78,976. Wm. Wrigley Jr. Co., Chicago, Ill. The words *Good Luck*. For chewing gum.
 78,977. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Picnic*. For chewing gum.
 78,978. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Pick*. For chewing gum.
 78,979. Wm. Wrigley Jr. Co., Chicago, Ill. The words *Pay Car*. For chewing gum.
 78,981. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Favorite*. For chewing gum.
 78,982. Wm. Wrigley Jr. Co., Chicago, Ill. The word *Polo*. For chewing gum.

- 7,360 (1913). Rubber spring. H. A. Wainwright, Manchester avenue, London.
- 7,360 (1913). Hosiery machine. H. A. Wainwright, Manchester avenue, London.
- [ABSTRACTED IN THE PATENT OFFICE JOURNAL, JUNE 18, 1914.]
- 7,628 (1913). Weavers' shuttle threader with rubber lined nozzle. B. T. Earnshaw, 21, Lawrence Road, Broadheath, Altrincham.
- 7,759 (1913). Spring wheel with rubber tread blocks. A. D. Curling, St. Dunstan's, Canterbury, Kent.
- 7,761 (1913). Tread band for pneumatic tire. W. J. Jackson, Mellersh, 28, Southampton Buildings, London.
- 7,761 (1913). Shoeing machine. H. A. Wainwright, Manchester avenue, London.
- 7,817 (1913). Rubber tire while in motion. A. D. Curling, St. Dunstan's, Canterbury, Kent.
- 7,827 (1913). Necktie retainer. F. Drinkewitz, Rathenow, Germany.
- 7,945 (1913). Synthetic caoutchouc substances. Farbenfabriken vorm. F. Bayer & Co., Leverkusen, near Cologne, Germany.
- 7,968 (1913). Drawing of sheeting machine. H. A. Wainwright, Manchester avenue, London.
- 7,969 (1913). Hand bag with rubber draw cord. Millington & Sons and F. E. Wilcock, Bridge Road, London.
- 8,040 (1913). Purifying rubber and other colloidal solutions. H. Debauge, 32, Avenue Montaigne, Paris, France.
- *8,060 (1913). Spring wheel. J. T. Clark, 142 West Second street, Provo, Utah, U. S. A.
- 8,061 (1913). Tire wrapping machine. T. E. Robertson, 104 Victoria street, Westminster.
- [ABSTRACTED IN THE PATENT OFFICE JOURNAL, JULY 2, 1914.]
- *8,071 (1913). Elastic band for attaching ruffles to undergarments. C. F. Schultz, 124 Maple street, Reading, Pa., U. S. A.
- 8,119 (1913). Solid tire and tire cover comprising rubber or the like. A. E. Wale, Coleshill, near Birmingham, and Wale's Invulnerable Tire Syndicate, Broad Street House, London.
- 8,159 (1913). Rubber heel protector. P. Stern, 2, Forray-Gasse, Arad, Hungary.
- 8,160 (1913). Inkstand with rubber air container. H. G. Neumann, Dringenburg, Post Hahn, Oldenburg, Germany.
- 8,219 (1913). Apparatus in which glass plates, etc., are lifted by a series of vacuum cups formed with single or concentric rubber rings. Soc. Anon. des Manufactures des Glaces et Produits Chimiques de St. Gobain, Chauny et Cirey, Franciere, Belgium.
- 8,323 (1913). Flesh rubbers for lathering appliances. W. Lloyd and W. Lloyd, both of 26, King street, Brighton.
- 8,380 (1913). Non-skid device for motor vehicles, comprising a gripping wheel surrounded by hard rubber. E. J. Buckingham, 5, Oval House, Brixton Oval, London.
- 8,485 (1913). Magnetic separators. S. J. H. Nathorst, Gellivare, Malmfalt, Malmberget, Sweden.
- *8,506 (1913). Spring wheel with continuous outer rigid ring and pneumatic rubber ring and like cushions. A. J. Meyer, 2718 North Whipple street, Chicago, Ill., U. S. A.
- *8,640 (1913). Spring wheel carrying a solid rubber tire. A. A. Picard, 162 West Fifty-sixth street, New York, N. Y., U. S. A.
- 8,648 (1913). Knitted garment having an elastic band. W. Buckler and O. Kerr, Walnut street, Leicester.
- 8,659 (1913). Spring wheel with pneumatic cushion. M. D. MacGoun, Carterton, New Zealand.

NEW ZEALAND.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, JUNE 4, 1914.]

- 34,379. Cushion for the heels of footwear. H. Goodacre, Courtney street, Plymouth.
- 34,535. Machine for testing billiard tables, comprising rubber pads or buffers. J. D. Cade, Park Road, Addington, Christchurch.
- [ABSTRACTED IN THE PATENT OFFICE JOURNAL, JUNE 18, 1914.]
- *34,625. Making and molding device for rubber articles. F. T. Roberts and R. H. Roshenfeld—both of Trenton, N. J., U. S. A.
- [ABSTRACTED IN THE PATENT OFFICE JOURNAL, JULY 2, 1914.]
- 34,679. Elastic pencil carrying device. K. M. Stevens, Maungatapere, Whangarei.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application.)

- 466,529 (December 24, 1913). Elastic tire for vehicles. Century Rubber Co.
- 466,764 (December 30). Appliance for retaining rubbers in place on shoes. E. J. Akins.
- 466,797 (October 11). Improvements in hosiery looms using rubber wefts, in plain and ribbed effects. P. M. Kretz.
- 466,923 (December 30). Improvements in rims and tires for all kinds of vehicles. F. J. Hadfield.
- 466,957 (January 3, 1914). Process for making tire covers. H. J. Doughty.
- 466,967 (January 3). Pneumatic tire divided into segments. E. R. Devreux.
- 467,009 (January 5). Improvements in vehicle tires. M. D. Rucker.
- 467,014 (January 5). Dress shield with movable sheet of rubber. Madame de Clion.
- 467,124 (January 6). Improvements in rotating heels for footwear. E. V. Argand.

- J. Duchateau.
- 467,302 (March 26, 1913). Pneumatic tire with rigid cover for vehicle wheels. A. Blum.
- 467,366 (January 16, 1914). Cover for wheels of automobiles and other vehicles. A. Mazio.
- 467,455 (January 19). Protective appliance for air chambers of pneumatic tires. C. Sigg.
- 467,477 (January 20). Improvements in so-called rotating heels. Madame de Clion.
- 467,489 (January 20). Improvements in mudguards for vehicle wheels. L. A. Gachez.
- 467,546 (January 21). Elastic tire for vehicles of all kinds. A. Boerner.
- 467,552 (January 21). System of mudguard. L. A. Gout.
- 467,577 (January 22). Armed pneumatic tire. J. E. Lee.
- 467,646 (April 2, 1913). Cover removable from a filled tire. F. Pfeumer.
- 467,653 (January 23, 1914). Elastic wheel. A. Ballare.
- 467,713 (January 26). Tire for wheels. F. Ludecke.
- 467,738 (January 26). Elastic wheel for automobiles and other vehicles. M. Bovy.
- 467,868 (January 30). Wheel with demountable rim. Prowodnik Co.
- 468,011 (February 3). Elastic tire. M. Clark.
- 468,112 (February 6). Protective appliance for pneumatic tires. F. C. Bigé.
- 468,158 (February 7). Rubber cord on a lacing loom. Gustav Funkenberg Co.
- 468,160 (February 7). Improvements in rubber mudguards covered with fabric for automobiles and other vehicles. "Parisienne" Rubber Co.
- 468,169 (February 7). Mudguard for vehicles. E. Loscher.

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity.)

- 276,363, Class 39b (June 25, 1913). Process for production of solid elastic masses. Dr. Walter Meusel, Treptower Chaussee, Berlin.
- 276,678, Class 39b (August 6, 1913). Separation of rubber from its similar sub-products in the synthesis of rubber. Arthur Heinemann, London.
- 276,775, Class 39b (April 16, 1913). Manufacture of products resembling vulcanized rubber. Badische Anilin- & Soda-Fabrik, Ludwigs-hafen-on-Rhine.
- 276,700, Class 63e (July 2, 1913). Wheel tires of rubber with hollow spaces transversely arranged. Albert Wetzel, Ludwigsburg.
- 276,960, Class 39b (April 16, 1913). Manufacture of products resembling vulcanized rubber. Badische Anilin- & Soda-Fabrik, Ludwigs-hafen-on-Rhine.
- 277,340, Class 30k (October 11, 1913). Inhaling apparatus. Carl August Ulbrich, Ruschlikon, Switzerland.
- 277,451, Class 63e (December 20, 1913). Protective cover for pneumatic tires. Hercules Pneumatic Tire Works, Bremen.
- 277,505, Class 39b (July 27, 1913). Separation of vulcanized rubber from fabric and metallic linings. Jules Frydman, Paris.
- 277,549, Class 39b (April 19, 1913). Process for making rubber compounds with or without the use of filling substances. Condensite Company of America, Glen Ridge, N. J., U. S. A.
- 277,630, Class 86c (November 15, 1912). Elastic tissue, some parts of which are non-elastic or less elastic than the remainder. Julius Rompler Co., Zeulenroda.

RUBBER TREAD WITH STEEL STUDS.

It is well known that steel-studded tires often slip on asphalt, street car tracks and stone pavements but grip the road surface on macadam. A combination of rubber and steel, however, prevents side slips on all kinds of roads. A new tire, which it is claimed embodies this principle has recently been placed upon the English market. As shown in the illustration, the tread of the tire is grooved and these grooves are provided with steel studs set into the rubber, their top surfaces being flush with the tread. This allows greater resilience than is often realized in the separate studded tire cover. Also, a tire of this kind does not require such high inflation as does one with an additional protector and it is therefore more comfortable to ride upon. [The Sirdar Rubber Co., 21 Crawford street, London, England.]



THE MARKET FOR COMPOUNDING INGREDIENTS AND CHEMICALS.

THE general chemical market has been affected by the recent dislocation more than the actual rubber market, and perhaps more than any other large line of business.

Fortunately towards the end of the month the hysteria has quieted down, and it is seen that we may produce many things we have been importing or use substitutes to a great extent. Prices are thus tending to a steadier basis.

SULPHUR.

This most important substance for the rubber man we described in our August issue at some length, showing that in the last ten years America had succeeded in producing enough for her entire supply instead of being dependent on Italy or Sicily as heretofore. It is understood that there is in stock enough to last the entire United States for about three years. The prices, therefore, will not rise. But other industries, such as the paper industry and the acid industry, which have used Spanish pyrites, may be forced to use home-produced sulphur, when the consumption will greatly increase.

Brimstone is quoted at \$22.50 per long ton, while roll sulphur is quoted at \$1.85 per hundred pounds, with flour and flowers at \$2 to \$2.40.

ZINC OXIDE AND LITHOPONE.

While the United States makes a large quantity of these articles, yet much has been imported. Liege is about the center of the Belgian zinc industry, which extends down into Luxemburg, so that imports will not amount to much in the near future. The United States exported 3,100,835 pounds in June, worth \$130,459.

Present quotations for zinc oxide are: 5½c. for American process, 6.5c. for French process red seal, 7c. for green seal, and 7.5c. for white seal. No quotations are available on French and German zincs.

There is no settled quotation on the market for foreign grades of lithopone. Inquiry has been increased for domestic by the present state of the foreign market. It has been stated that there is considerable difference in quality between the products of different domestic makers, and buyers are careful about the quality. Prices are quoted at 3.75 to 4.25c. per pound.

LEAD COMPOUNDS.

Fortunately the United States produces much more lead and its compounds than it consumes, and importations are confined to special grades, believed by some to be better than the domestic products.

Litharge is quoted in a large way at 5.25c. per pound, and smaller quantities are somewhat higher. Red lead is quoted at 5.75 to 6.5c. per pound, and orange mineral is quoted at 8.5c. per pound, while the Old Dutch process white lead sells at 5.25c. per pound and the sublimed lead (basic sulphate) at the same figure.

EARTHY FILLERS.

Magnesia.—Most of the magnesia used in the United States has been imported from the neighborhood of the Balkans, and while calcined magnesite, with 90 per cent. of pure magnesia content, has been sold at \$30 per ton, the higher grades have sold as high as 10c. per pound. With the foreign supply shut off prices will be subject to violent fluctuations. There are immense deposits on the Pacific Coast which will be available with the opening of the canal, and American manufacturers are rushing up works to produce this article.

Chalk.—This is a product we have been importing, and, with the shutting off of supplies, prices will be erratic until importations from England, which are promised, again begin. There is no American chalk which can compete with the English.

China Clay.—It is reported that boats are loading for ship-

ment from England. In the meantime the American product can be had at \$9 per ton.

Barytes.—Imported grades are nominal. The United States has immense deposits in Missouri and elsewhere, and it is only a matter of freight to get them to market. Good grades of domestic are quoted at \$17 to \$20 for floated f. o. b. works.

Whiting.—The uncertain position of chalk makes an uncertain market for this product, but manufacturers are said to be stocked with a supply for the next six months. Blanc fixe is quoted at 4c. per pound in 600-pound barrels.

SOLVENTS.

Sulphur Chloride.—While this is not in the usual sense a rubber solvent, yet it is a liquid used with other solvents. As it is a kind of by-product and made in the United States, its price may continue stable.

Naphthas.—The rubber trade has seen the price of petroleum naphthas steadily rise for a long time and the quality gradually grow worse. This was due to the enormous demand for motor gasoline, which has increased so astonishingly. Several months ago, however, there began a recession of prices on all light petroleum products owing to the discovery of enormous quantities of oil in the Cushing pool in Oklahoma, which in some cases gave 35 per cent. gasoline. The present disturbance has prevented exportation, and therefore will tend to depress prices still further. At present automobile gasoline is sold on a basis of 13c. in New York, and other light products in proportion.

Now is the time for the rubber industry to insist on again getting a suitable naphtha, such as was furnished, say ten years ago, and which can now be made in almost unlimited quantities.

Benzol and coal-tar naphthas are advancing in price, owing to their use in making the aniline dyes formerly imported.

Carbon bi-sulphide is excited and has risen to 15c., though almost the entire consumption is produced in domestic plants. Carbon tetra-chloride has jumped from 6.5c. to 10c. in car lots, and any price may be asked or given—18c. has been quoted.

Lamp-black.—The foreign grades are of course out of sight and will soon be out of mind. Domestic gas carbon black may be had at 3c. to 6c. per pound.

Waxes.—Beeswax is quoted at 40c., and as we import a considerable quantity it may advance. White ozocerite is quoted at 25c. and is an article imported from Austria. Paraffine wax, on the other hand, is a domestic article, and the best grade of 135 m. p. is quoted at 6.5c. per pound.

Of course these prices are only for the minute and may vary widely from day to day till a final readjustment is accomplished.

SITUATION OF PLANTATION COMPANIES.

Advances on shipping documents are the pivot on which the trade of the Far East turns. Hence the refusal of the banks to make the usual advances has been severely felt by the plantation companies. The necessity of some action has been urged if the labor force on the estates is to be kept in shape.

Suggestions have been made of the banks making advances within definite limits; guaranteed in each case by the colonial government affected. A scheme of this character should, it has been added, include Sumatra and Java, as well as the Federated Malay States, Straits Settlements, South India, Borneo and Ceylon.

The European staffs of various plantation companies have been requested for the present to confine their salary drawings to urgent requirements.

The Kepong (Malay) Rubber Estates, Limited, has cancelled the resolutions for the payment of an *interim* dividend on July 15. It has been decided to follow this course as a precautionary measure, with a view to increasing the cash resources of the company. Similar action has been taken by the Anglo-Malay Rubber Co., Ltd.

Review of the Crude Rubber Market.

SINCE April 17, when the London prices of fine Para and plantation rubber stood on a level at 3s. $\frac{1}{2}$ d. (73.99 cents) the former had by July 31 receded to 2s. 10 $\frac{1}{2}$ d. (69.93), while the latter had dropped to 2s. (48.65 cents). The latter days of July had witnessed a fair demand for consumption. Confidence was felt in the situation of the American trade; the demands reported for fall tending to disprove any idea of United States manufacturers being overstocked with goods. Meanwhile, rubber supplies of unprecedented magnitude were anticipated from the East.

The month of July with three auctions including an aggregate of 2,535 tons was a test of the market's absorbent capacity. Two sales were held at the normal dates of July 7 and 21, each of about 1,000 tons, which met with a brisk demand. Owing to the approach of the Bank Holiday on August 3, a supplementary auction was held on July 28, the last sale held before the market closed by reason of the war. About 440 tons were offered, for which competition was good, prices showing a reduction of only $\frac{1}{4}$ d. to $\frac{1}{2}$ d. on those ruling the previous week.

The latest nominal quotations on August 1, before the holidays, were fine Para 2s. 10d. (68.92 cents); plantation 2s. (48.65 cents).

In view of the opening of the war in the first days of August business was dislocated and although on August 8 the price of 2s. (48.65 cents) was nominally still current for plantation, no business was being done, the disturbance of shipping facilities rendering both sellers and buyers disinclined to operate.

The market had not reopened after the bank holiday of August 3, and the auction scheduled for August 11 was indefinitely postponed.

NEW YORK MARKET FOR PARA RUBBER

In the closing days of July upriver fine Pará was being offered in New York at 72 cents and first latex at 55-56 cents; quotations on July 30 being respectively 70-71 cents and 54-55 cents. On July 31 contract business was suspended and all quotations by speculators withdrawn. August 1 witnessed a market of the usual quietness for a Saturday. On the following Monday, August 3, while London was closed, there was a sharp advance in upriver fine Pará, a sale having been reported at \$1 a pound, being 30 cents above the price of 70 cents current on the previous Saturday.

From August 5 to August 15 prices nominally ranged from \$1.10 to \$1.25; sales being reported at \$1.10 to \$1.20.

On August 12, advices were received of a steamer with 275 tons of rubber being scheduled from Brazil, but leading sellers would not quote less than \$1.10; nominal quotation of August 13 was \$1.15 to \$1.25, with a good inquiry from manufacturers, but with actual business light. On August 14 business was transacted at \$1.10, like conditions being reported on August 15.

The break in prices which occurred on August 17, owing to large arrivals and anticipated large shipments, rendered the market very sensitive. Upriver fine could be purchased at 90 cents, as compared with \$1.10 on the previous Saturday. In the opinion of prominent manufacturers the prospects of the needed supply of rubber were more promising than had been the case.

The quotations on August 24 and 25 were 80 to 90 cents and on August 27, 75 to 80 cents. The latest cable from London (August 26) quoted Upriver Pará at 2s. 11d. (70.95 cents) as compared with 2s. 10d. (68.92 cents) on August 1.

The New York market has been relatively bare of advices from Brazil, the government of that country having declared a holiday until August 15. It was however anticipated by importers that Brazilian supplies would come forward according to schedule. The view was entertained in some quarters that

as the production of the Amazon had been dropping off from year to year, it would not entirely cover the wants of American manufacturers, even if they got the whole of it. It was anticipated that supplies from the Far East and Brazil would come forward in the near future, but the rates of insurance and exchange rendered operations difficult.

According to a report current, a London syndicate is said to have purchased the largest proportion of the London supply with the intention of shipping it to America.

It was moreover reported that the Finance Minister of Brazil contemplates dispatching to the United States several vessels carrying rubber from Pará, to bring back food and other products.

NEW YORK MARKET FOR PLANTATION RUBBER

Plantation rubber had closed on July 30 at 54 to 55 cents, but was affected in sympathy with the movement in fine Pará, and on August 5 was nominally \$1.08, while for actual business it was reported that 85 to 90 cents would be accepted. On August 8, sales were made at \$1.10 to \$1.15, while on August 10, \$1.12 was paid. This price was approximately maintained on the following days. On August 17 the market dropped to 90 cents under the influence of actual and prospective receipts, in conjunction with the market situation.

On August 18, in London, first latex pale crêpe was quoted at about 79 cents c.i.f. New York (while in New York 80 to 85 cents remained the nominal quotation).

During the last few days the course of plantation prices in New York has been: August 19, 80 to 85 cents; 20th, 80 to 85 cents; 21st, 80 to 85 cents; 22d, 80 to 85 cents; 24th, 75 cents; 25th, 75 cents; 26th, 70 to 75 cents.

An auction of 400 tons plantation took place in London on 25th, when quotations were nominal.

By the latest London cable (August 26) the quotation for first latex pale crêpe was 2s. 1 $\frac{1}{4}$ d. (51.18 cents), as compared with 2s. (48.65 cents) on August 1.

The Antwerp sale of July 23 resulted as follows:

	Offered	Sold	Percentage of reduction on valuations
Congo tons	274	162	41
Plantation	235	223	3

Consumers had of late been taking up rubber on its arrival, so that stocks were normal. Another auction had been announced for August 19, which has been postponed *sine die*, in view of the grave situation in Belgium. The quantities scheduled were 126 tons Congo and 56 tons plantation.

At the Amsterdam inscription sale of July 28, 157 tons *Hevea* and 12 tons *Ficus* were sold at low prices; the *Hevea* realizing 4 per cent. and the *Ficus* 10 per cent. below valuations. Of the total of 169 tons, 164 were sold. The date of the next Amsterdam sale has not yet been fixed.

In the Rotterdam sale of July 31 were included about 32 $\frac{1}{2}$ tons *Hevea* and 7 tons *Ficus*. Owing to the present disturbed situation a date has not yet been fixed for the next sale.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and August 29, the current date:

PARA.	Sept. 1, '13.	Aug. 1, '14.	Aug. 29, '14.
Islands, fine, new.....	77@78	57@59	65@70
Islands, fine, old.....	.....	58@62	.....
Upriver, fine, new.....	88@89	72@73 $\frac{1}{2}$	75@80
Upriver, fine, old.....	92@	72@75	.....
Islands, coarse, new.....	29@30	27@29	45@

PARA	Sept. 1, '13.	Aug. 1, '14.	Aug. 29, '14.
Islands, coarse, old.....			
Upriver, coarse, new.....	51@52	39@42	55@60
Upriver, coarse.....			
Cameta.....	37@38	30@31	40@
Caucho, upper.....	50@51	38@41	50@
Caucho, lower.....		35@37	

PLANTATION	Sept. 1, '13.	Aug. 1, '14.	Aug. 29, '14.
Fine smoked sheet.....	70@72	56@59	75@80
Fine pale sheet (near by 1 forward).....	67@68	53@56	70@75
Fine sheets and biscuits un-smoked.....	65@66	54@56	70@75

CENTRALS.	Sept. 1, '13.	Aug. 1, '14.	Aug. 29, '14.
Esmeralda, sausage.....	50@51	38@41	45@
Guayaquil, strip.....			
Nicaragua, scrap.....	50@51	35@40	40@
Panama.....			
Mexican plantation, sheet.....		40@47	
Mexican, scrap.....	48@49	36@41	45@
Mexican, slab.....		25@35	
Mangabeira, sheet.....			
Guayule.....		25@35	55@
Balata, sheet.....	70@71	45@48	62@64
Balata, block.....	50@51	48@53	

AFRICAN.	Sept. 1, '13.	Aug. 1, '14.	Aug. 29, '14.
Lopori, ball, prime.....	58@	45@53	
Lopori, strip, prime.....			
Aruwimi.....	45@47	38@47	
Upper Congo, ball red.....	56@58		
Ikeloma.....		38@45	
Sierra Leone, 1st quality.....	53@54	35@47	
Massai, red.....		40@50	75@85
Soudan Niggers.....		36@46	36@46
Cameroon, ball.....	38@43	25@35	
Benguela.....		25@31 1/2	
Madagascar, pinky.....			
Accra, flake.....		22@22 1/2	

EAST INDIAN.	Sept. 1, '13.	Aug. 1, '14.	Aug. 29, '14.
Assam.....		35@55	
Pentarak.....		5@6 1/2	9@
Borneo III.....		20@25	
Borneo II.....		27@29	
Borneo II.....		45@	

PARA RUBBER VIA EUROPE.

July 25.—By the Baltic=Liverpool:	POUNDS.
W. R. Grace & Co (Fine).....	1,000
General Rubber Co.....	4,000
July 27.—By the Commaijne=Ciudad Bolivar:	
Arnold & Zeiss.....	22,500
General Rubber Co.....	14,000
Co. (Coarse).....	1,000
Schutte, Bunemann & Co (Fine).....	35,000
Schutte, Bunemann & Co.....	
Rubber & Guayule Agency, Inc. (Fine).....	15,000
Ed. Maurer (Fine).....	11,200
August 4.—By the Rochambeau=Havre:	
Arnold & Zeiss (Fine).....	22,500
Co. (Fine).....	3,000

G. Amsinck & Co. (Fine).....	3,500
Schutte, Bunemann & Co. (Fine).....	4,000
Schutte, Bunemann & Co.....	4,000
Yglesias, Lobo & Co. (Fine).....	6,500
Yglesias, Lobo & Co. (Coarse).....	3,000
August 11.—By the Colon=Liverpool:	
Henderson & Korn (Fine).....	4,500
Johnstone, Whitworth & Co.....	5,000
Johnstone, Whitworth & Co.....	4,500
August 17.—By the Hamatic=Liverpool:	
Rubber & Guayule Agency, Inc. (Fine).....	22,500
August 17.—By the Laconia=Liverpool:	
Arnold & Zeiss (Fine).....	11,200
August 22.—By the Baltic=Liverpool:	
Johnstone, Whitworth & Co.....	5,000
Johnstone, Whitworth & Co. (Coarse).....	18,000
August 24.—By the St. Louis=Liverpool:	
Arnold & Zeiss (Fine).....	50,000
August 24.—By the Mayaro=Ciudad Bolivar:	
Yglesias, Lobo & Co. (Fine).....	15,000

CENTRALS.

	POUNDS.
W. R. Grace & Co.....	3,000

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "Right after my report to you for July, a complete change came over the market for commercial paper, in sympathy with all other financial matters, on account of the war troubles in Europe, and there was almost a complete cessation of business for the first half of August, but during the last half of the month some out of town banks have bought a little of the best rubber paper at 7 @ 8 per cent.—the less known names being neglected entirely."

NEW YORK PRICES FOR JULY (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine.....	\$0.68 @ 0.75	\$0.84 @ 0.92	\$1.10 @ 1.19
Upriver, coarse.....	40 @ 42	51 @ 56	85 @ 91
Islands, fine.....	57 @ 66	74 @ 81	1.00 @ 1.08
Islands, coarse.....	27 @ 30	35 @ 34	54 @ 57
Cameta.....	30 @ 34	37 @ 40	62 @ 65

IMPORTS FROM PARA AT NEW YORK.

[The Figures denote Weight in Pounds.]

JULY 27.—By the steamer Stephen from Pará and Manaós:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	64,500	5,000	49,200	248,500	367,200
Meyer & Brown.....	15,400	1,000	37,600	56,200	110,200
General Rubber Co.....			3,100		3,100
H. A. Astlett & Co.....			23,800	85,000	108,800
Henderson & Korn.....	25,400	7,100	30,300	7,000	69,800
Hagemeyer & Brunn.....	2,500	1,400	22,400		26,300
Johnstone, Whitworth & Co.....			13,900		13,900
G. Amsinck & Co.....	1,500		1,500	1,600	4,600
Robinson & Co.....	2,400				2,400
Total.....	111,700	14,500	181,800	398,300	706,300

AUGUST 6.—By the steamer Gregory from Pará and Manaós:

Arnold & Zeiss.....	68,700	14,800	44,700	4,200	132,400
General Rubber Co.....	24,400	4,900	6,500		35,800
Meyer & Brown.....	29,600	5,600	48,400	23,900	107,500
Hagemeyer & Brunn.....			24,400		24,400
Henderson & Korn.....	23,300	3,600	24,800		51,700
H. A. Astlett & Co.....	1,100	9,700	9,600		20,400
Johnstone, Whitworth & Co.....			8,600		8,600
W. R. Grace & Co.....			5,700		5,700
Total.....	147,100	38,600	167,000	33,800	386,500

AUGUST 6.—By the steamer Gregory from Iquitos:

Meyer & Brown.....			112,100		112,100
H. A. Astlett & Co.....	1,500		2,600	53,400	57,500
W. R. Grace & Co.....				8,100	8,100
G. Amsinck & Co.....				1,600	1,600

AUGUST 10.—By the steamer Francis from Pará and Manaós:

Arnold & Zeiss.....	126,000	8,100	9,700	21,900	165,700
Meyer & Brown.....	5,400	400	7,300	6,200	19,300
General Rubber Co.....	4,100	7,800	7,200	300	57,400
Henderson & Korn.....	62,200	11,300	6,000	700	80,200
H. A. Astlett & Co.....	7,100	2,100	39,900	3,000	52,100
Hagemeyer & Brunn.....	1,100	700	29,300	1,200	32,300
Total.....	243,900	30,400	99,400	33,300	407,000

JULY 29.—By the Oranienstein Colon:

A. Angel & Co.....	1,500
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JULY 31.—By the Vanduyck=Bahia:

Adolph Hirsch & Co.....	7,500
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AUGUST 3.—By the General Colombia:

A. Held.....	4,500
Caballero & Blanco.....	2,500
Total.....	7,000

AUGUST 3.—By the Allianca=Colon:

G. Amsinck & Co.....	1,800
Isaac Brandon & Bros.....	200
Total.....	2,000

AUGUST 5.—By the Prinz Eitel Frederick=

G. Amsinck & Co.....	1,700
Andean Trading Co.....	800
Total.....	2,500

AUGUST 10.—By the Colon=Colon:

G. Amsinck & Co.....	700
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AUGUST 14.—By the San Antonio=Mexico:

E. Steiger & Co.....	10,000
Harburger & Stack.....	7,500
F. W. Dunbar.....	7,500
Laurence Johnson & Co.....	1,200
J. Menendez & Co.....	300
L. S. Sembrada & Co.....	400
Lanman & Kemp.....	700
General Export & Commission Co.....	1,500
F. W. Burchard.....	3,500
Total.....	32,600

August 11.—By the <i>Kroonland</i> =Antwerp:	
Meyer & Brown.....	*200,000
Arnold & Zeiss.....	*17,500
Various.....	*80,000 *297,500

August 22.—By the <i>Panama</i> =Colon:	
G. Amsinck & Co.....	5,000
Various.....	

AFRICAN.

July 28.—By the <i>Chalister</i> =Singapore:	
Arnold & Zeiss.....	1,000
Rubber & Guayule Agency, Inc.....	1,000
Ed. Maurer.....	1,000
Various.....	

July 28.—By the <i>Chalister</i> =Singapore:	
Meyer & Brown.....	11,000
July 27.—By the <i>Chalister</i> =Singapore:	
Arnold & Zeiss.....	7,000
July 28.—By the <i>Chalister</i> =Singapore:	
Various.....	17,000

July 30.—By the <i>Pennsylvania</i> =Hamburg:	
Rubber & Guayule Agency, Inc.....	9,500
Various.....	10,000
July 31.—By the <i>Pennsylvania</i> =Hamburg:	
Arnold & Zeiss.....	13,500

August 4.—By the <i>Baltic</i> =Liverpool:	
Various.....	7,000
August 5.—By the <i>Olympic</i> =Southampton:	
Rubber & Guayule Agency, Inc.....	24,000
Various.....	16,000 40,000

August 5.—By the <i>Olympic</i> =Southampton:	
Meyer & Brown.....	60,000
August 11.—By the <i>Kroonland</i> =Antwerp:	
Meyer & Brown.....	70,000
Rubber & Guayule Agency, Inc.....	17,000
Rubber Trading Co.....	8,000
Various.....	8,000 104,000

August 18.—By the <i>Baltic</i> =Liverpool:	
Meyer & Brown.....	11,000
August 22.—By the <i>Baltic</i> =Liverpool:	
Johnstone, Whitworth & Co.....	22,500
Various.....	4,500 27,000

August 24.—By the <i>St. Louis</i> =Liverpool:	
Arnold & Zeiss.....	4,500

EAST INDIAN.

[*Denotes plantation rubber.]

July 28.—By the <i>Chalister</i> =Singapore:	
Rubber & Guayule Agency, Inc.....	*8,500
Ed. Maurer.....	*8,000
Various.....	*15,000 *31,500

July 28.—By the <i>Chalister</i> =Singapore:	
Meyer & Brown.....	*9,000
Ed. Maurer.....	*17,000
Rumsey & Greutert Co., Inc.....	*13,500
Latex Bros.....	*2,000
Robinson & Co.....	*2,000
Raw Products Co.....	*2,000
Rubber Trading Co.....	*2,000
Arnold & Zeiss.....	*2,000
Johnstone, Whitworth & Co.....	*42,000
Goodyear Tire & Rubber Co.....	*27,000
Various.....	*4,000 *107,500

July 28.—By the <i>Chalister</i> =Singapore:	
Henderson & Korn.....	1,000
W. R. Grace & Co.....	1,000
Charles T. Wilson.....	4,600
Meyer & Brown.....	4,000
Jenstone, Whitworth & Co.....	4,500
W. Stiles.....	*95,000
Goodyear Tire & Rubber Co.....	*1,500
Ed. Maurer.....	*1,500
Various.....	*4,000 *110,000

Various.....	*15,500 *24,500
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Henderson & Korn.....	*1,000
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JULY 30.—By the *Chalister*=Singapore:

The B. F. Goodrich Co.....	*150,000
W. R. Grace & Co.....	*5,600
Arnold & Zeiss.....	*16,000
Johnstone, Whitworth & Co.....	*25,000
Henderson & Korn.....	*75,000
L. Littlejohn & Co.....	*100,000
Ed. Boustead & Co.....	*16,000
Various.....	*400,000 *929,600

July 31.—By the <i>Sloterdyk</i> =Rotterdam:	
Meyer & Brown.....	*18,000
Various.....	*7,000 *25,000

August 3.—By the <i>St. Paul</i> =Southampton:	
Arnold & Zeiss.....	*33,500
Various.....	*85,000 *118,500

August 3.—By the <i>Roseric</i> =Colombo:	
Meyer & Brown.....	*33,600
Arnold & Zeiss.....	*25,000
Rubber & Guayule Agency, Inc.....	*15,000
Robinson & Co.....	*15,000
Adolph Hirsch & Co.....	*15,000
Johnstone, Whitworth & Co.....	*10,000
Various.....	*70,000 *183,600

August 4.—By the <i>Chalister</i> =Singapore:	
Ed. Boustead & Co.....	*15,000
W. R. Grace & Co.....	*14,000
Charles T. Wilson.....	*5,500
Johnstone, Whitworth & Co.....	*22,500
Various.....	*15,000 *72,000

August 4.—By the <i>Chalister</i> =Singapore:	
Meyer & Brown.....	*100,000
Various.....	*40,000 *140,000

August 5.—By the <i>President Lincoln</i> =Hamburg:	
Arnold & Zeiss.....	*4,500
Rubber & Guayule Agency, Inc.....	*13,500 *18,000

August 5.—By the <i>Olympic</i> =Southampton:	
Meyer & Brown.....	*6,000
Rubber Trading Co.....	*11,200
Raw Products Co.....	*6,000
Henderson & Korn.....	*50,000
Arnold & Zeiss.....	*65,000
Ed. Maurer.....	*13,500
Charles T. Wilson.....	*27,000
Goodyear Tire & Rubber Co.....	*85,000
Various.....	*15,000 *278,700

August 5.—By the <i>Ockenfels</i> =Colombo:	
Meyer & Brown.....	*22,500
Arnold & Zeiss.....	*18,000
Rubber & Guayule Agency, Inc.....	*4,500
W. R. Grace & Co.....	*6,000
Various.....	*75,000 *126,000

August 5.—By the <i>Ockenfels</i> =Colombo:	
Arnold & Zeiss.....	*82,000
Henderson & Korn.....	*18,000
Ed. Maurer.....	*35,000
Goodyear Tire & Rubber Co.....	*33,500
Various.....	*40,000 *208,500

August 10.—By the <i>Minnetonka</i> =London:	
General Rubber Co.....	*140,000
Henderson & Korn.....	*46,000
Charles T. Wilson.....	*67,000
Raw Products Co.....	*4,500
Johnstone, Whitworth & Co.....	*2,000
Various.....	*1,000 *250,000

August 11.—By the <i>Kroonland</i> =Antwerp:	
Meyer & Brown.....	*200,000
Arnold & Zeiss.....	*17,500
Various.....	*80,000 *297,500

August 11.—By the <i>Kroonland</i> =Antwerp:	
The B. F. Goodrich Co.....	*150,000
Arnold & Zeiss.....	*20,000
Johnstone, Whitworth & Co.....	*40,000
L. Littlejohn & Co.....	*95,000
Ed. Maurer.....	*25,000
Various.....	*295,000 *735,500

August 17.—By the <i>Bohemia</i> =Hamburg:	
Rubber & Guayule Agency, Inc.....	*6,000
Manhattan Rubber Mfg. Co.....	*8,500
Robinson & Co.....	*2,200
Various.....	*1,000 *17,700

August 22.—By the <i>Baltic</i> =Liverpool:	
Johnstone, Whitworth & Co.....	*30,000

August 22.—By the <i>Baltic</i> =Liverpool:	
Meyer & Brown.....	*50,000
Rubber & Guayule Agency, Inc.....	*30,000
W. R. Grace & Co.....	*10,000
Arnold & Zeiss.....	*1,500
Johnstone, Whitworth & Co.....	*20,000
Ed. Maurer.....	*12,000
Robinson & Co.....	*17,000
Henderson & Korn.....	*20,000 *210,500

August 24.—By the <i>Noordam</i> =Rotterdam:	
Various.....	*1,000

August 25.—By the <i>Minnewaska</i> =London:	
Johnstone, Whitworth & Co.....	*50,000
Arnold & Zeiss.....	*35,000
Michelin Tire Co.....	*40,000
Ed. Boustead & Co.....	*15,000
General Rubber Co.....	*2,000
W. R. Grace & Co.....	*2,000
Charles T. Wilson.....	*60,000
Adolph Hirsch & Co.....	*8,000
Ed. Maurer.....	*3,000
Various.....	*190,000 *405,000

CUSTOM HOUSE STATISTICS.

Imports.	Pounds.	Value.
Gutta percha.....	111,989	\$4,266,121
Gutta jelatong (Pontianak).....	1,855,906	33,430
Total.....	11,534,864	\$4,561,113

Exports.	Pounds.	Value.
Rubber scrap, imported.....	1,323,101	\$88,404
Rubber scrap, exported.....	274,118	34,175
Total.....	77,560	\$34,461

BOSTON IMPORTS IN JULY, 1914.

	Pounds.	Value.
Gutta jelatong.....	507,204	\$19,637
Gutta percha.....	160,345	19,187
India rubber.....	43,138	22,613

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING THE MONTH OF JULY, 1914.

EXPORTERS.	NEW YORK.					EUROPE.					TOTAL.
	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	
Zuges, Pomeroy & Co., Inc.....	50,284		81,625	107,367	253,601	81,224	5,072	5,671	38,460	130,427	
Ad. H. V. Co., Ltd.....				1,484	105,931	9,431	3,208	10,072	5,458	38,169	38,169
General Rubber Co., Ltd.....		3,264	29,820	1,484	261,120	6,630	170		12,870	19,670	125,601
J. Marques.....		22,064	122,607	4,899	77,716			5,940	21,280	97,090	358,210
Seligmann & Co.....	8,720		4,899	6,409		10,090		3,418	11,220	24,728	102,444
De Longhelle & Co.....						2,540	170	900	609	27,370	4,210
Pires Teixeira & Co.....	3,740	2,550	83,610	280		27,370			6,035	6,035	15,840
Sandry exporters.....	5,284	22	2,415	1,534					1,650	1,650	
Itacatiara, direct.....											
Manaos, direct.....	158,681	42,225	324,976	274,991	800,873	215,965	10,150	27,311	95,923	313,000	1,150,222
Iquitos, direct.....	9,653	23,014	41,129	71,349	316,686	105,402	31,551	31,251	144,884	236,497	321,998
Total.....	248,518	65,239	367,410	420,883	1,203,060	323,853	42,201	61,609	471,273	898,936	2,101,996



Vol. 50.

September 1, 1914.

No. 6.

TABLE OF CONTENTS.

Editorials:	Page.
The War and the Rubber Trade in the United States.....	637
The Opening Door of South American Trade.....	638
War Prices Will Start Synthesists Again.....	639
The Importance of the Soldier's Shoe.....	640
The Possibilities of the Motorcycle.....	640
Minor Editorial.....	640
Some Neglected Nearby Markets—III. (Guatemala.).....	641
The Future of the Rubber Industry on the Upper Amazon.....	643
Growing Rubber in Ohio.....	645
Plantation Rubber Supplies.....	647
What the Rubber Chemists Are Doing.....	649
The Influence of Nitrogen Compounds on the Vulcanization of Rubber.....	650
The Editor's Book Table.....	652
New Trade Publications.....	655
Official India Rubber Statistics for the United States.....	656
The Story of Building a Rubber Boot.....	657
The Liability of Railroads for Lost or Damaged Goods.....	659
The Rubber Dealer's Paradise (Labrador).....	660
The Rubber Trade in Akron.....	661
The Rubber Trade in Boston.....	661
The Rubber Trade in Rhode Island.....	662
The Rubber Trade in Chicago.....	663
The Obituary Record.....	664
News of the American Rubber Trade.....	665
New Rubber Goods in the Market.....	670
The Rubber Tire.....	671
New Machines and Appliances.....	672
The India Rubber Trade in Great Britain.....	675
Additional Awards of Prizes at the London International Rubber Exhibition.....	676
International Congress of Tropical Agriculture.....	676
The German Rubber Industry.....	677
Some Rubber Planting Notes.....	678
Rubber Cultivation in Burma.....	679
Report of Gold Coast Government for 1912.....	680
Rubber in French Indo-China.....	680
Notes from Dutch Guiana.....	680
Notes from British Guiana.....	681
Some Interesting Letters from Our Readers.....	682
Recent Patents Relating to Rubber.....	683
The Market for Compounding Ingredients and Chemicals.....	686
Review of the Crude Rubber Market.....	687

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to July 30, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.)

	1913.	1914.
To Great Britain.....	5,961,258	8,273,621
To United States.....	3,511,470	4,615,246
To Belgium.....	1,649,601	2,686,091
To Australia.....	294,085	277,456
To Germany.....	124,449	971,761
To Japan.....	115,211	199,640
To Italy.....	36,507	312
To Austria.....	20,716	—
To Straits Settlements.....	20,064	40,252
To Holland.....	992	—
To India.....	881	550
To Russia.....	—	98,482
To France.....	—	205,180
Total.....	11,741,234	17,368,591

(Same period 1912—5,937,788; same period 1911—2,603,596.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 2,163,650 pounds—1,784,515 pounds from the Straits and 367,511 pounds from India.) To arrive at the approximate quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, July 8.	Malacca, June 30.	Penang, May 31.	Port Swettenham, July 14.	Total.
Great Britain.....	10,923,091	2,526,558	7,403,600	12,456,057	33,309,306
Continent.....	1,721,285	22,261	328,933	1,574,416	3,646,895
Japan.....	594,162	—	—	—	594,162
Ceylon.....	5,415	—	467,867	867,249	1,587,241
United States.....	5,097,680	—	414,133	136,590	6,548,403
Australia.....	38,407	—	—	—	38,407
Total, 1914.....	19,526,750	2,548,819	8,614,533	15,034,312	45,724,414
Total, 1913.....	12,944,585	—	5,863,467	14,340,559	33,148,611
Total, 1912.....	5,911,343	—	3,211,759	9,998,195	19,121,297
Total, 1911.....	2,766,372	—	1,764,641	6,401,716	10,932,729

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound:

August 29, 1914.

Old rubber boots and shoes—domestic.....	7 @
Pneumatic bicycle tires.....	3 @ 3¼
Automobile tires.....	5 @
Solid rubber wagon and carriage tires.....	5½ @
White trimmed rubber.....	10 @ 11
Heavy black rubber.....	3¼ @ 4
Air brake hose.....	3 @
Garden hose.....	1 @
Fire and large hose.....	2 @
Matting.....	¾ @
No. 1 white auto tires.....	5½ @ 18
Inner tubes.....	16 @ 18

AUSTRALIANS INQUIRE FOR "HUB MARK" LITERATURE.

Mr. Chester J. Pike, Jr., manager of the Hubmark Rubber Co., Boston, Massachusetts, recently received the following request from Sydney, Australia: "Would you be so good as to forward me a copy of your book entitled 'Hub Mark Common Sense' as noted in THE INDIA RUBBER WORLD of April, 1914."

This request proves two things conclusively—first, that the Antipodes are interested in "Hub Mark" literature, and second, that rubber men all round the globe look to THE INDIA RUBBER WORLD to keep them abreast of the times.

New York Botanical Garden Library



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